CC-Link/LT Master Module

User's Manual

MITSUBISHI

Mitsubishi Programmable
Logic Controller

MELSEC-Q

QJ61CL12

• SAFETY PRECAUTIONS •

(Be sure to read before use)

Before using this product, read through this manual and the relevant ones introduced in this manual to handle the product correctly and safely.
The following instructions are limited to the CC-Link/LT master module only. For safety precautions on the programmable logic controller (PLC) system, refer to the user's manual of the CPU module to be used.
In this manual, the levels of hazardous situations are shown as follows:

⚠ DANGER	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
⚠ CAUTION	Indicates that incorrect handling may cause hazardous conditions, resulting in medium or slight personal injury or physical damage.

Note that even a ⚠ CAUTION leveled situation may lead to a serious consequence. Be sure to follow the instructions of both levels.

Keep this manual in a handy place and make sure to deliver this to the end user.

[Design Precautions]

⚠ DANGER

- When the data link communication is faulty, refer to Chapter 6 of this manual for operating states of each station.
- When connecting peripheral devices to the CPU module, create interlock circuits in the sequence programs so that the safety of the whole system will be ensured.
  Before modifying programs, changing operating status (status control) or conducting other controls with the PLC running, thoroughly read the relevant manuals and confirm the safety.
  Especially when instructing these controls from external devices to a remote PLC, problems arisen on the PLC may not be solved immediately due to abnormal data communications.
  To prevent this, create interlock circuits in the sequence programs and set the corrective measures between the external devices and the PLC CPU in case of abnormal data communication.
- Do not write data to "Prohibited area" of the buffer memory.
  Doing so may lead to malfunction of the PLC system.

⚠ CAUTION

- Do not bring the control wires and communication cables close to the main circuit or power wires.
  Keep a distance of at least 100 mm between them.
  Failure to do so may cause malfunctions due to noise.

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[Installation Precautions]

⚠ CAUTION
• Use the PLC system in the operating environment that meets the general specifications of this manual. Using in any other environment may cause electric shocks, fires, malfunctions, or damage or deterioration of the product. • While pressing the installation lever located at the bottom of module, insert the module fixing tab into the fixing hole in the base unit until it stops. Then, securely mount the module with the fixing hole as a supporting point. Incorrect installation may cause malfunctions, fault or drop of the module. When using the module in an environment where constant vibrations may occur, secure it with screws. Tighten the screws within the specified torque range. Loose tightening may cause a drop of the module, a short circuit or malfunctions. Excessive tightening may cause the same as the above due to damage to the screws or the module. • Be sure to shut off all phases of the external power supply used by the system before mounting or dismounting the module. Failure to do so may damage the product. • Do not directly touch the conducting parts and electronic parts of the module. Doing so may cause a malfunction or a fault of the module.

[Wiring Precautions]

⚠ CAUTION
• Carefully prevent foreign matter such as chaff and wire chips from entering the inside of the module. They may cause a fire, fault or malfunction. • The top surface of the module is covered with a protective film to prevent foreign matter such as wire chips from entering the module during wiring. Do not remove the film until all the wiring is complete. Before operating the system, be sure to remove the film to radiate the heat. • For the CC-Link/LT, use the cables specified by the CC-Link Partner Association. The performance of the CC-Link/LT cannot be assured if any other cables than the specified are used. Also, observe the network wiring specifications given in Chapter 3. Normal data communication is not guaranteed if the wiring is not conducted according to the specifications. • Place the communication cables or power cables for the module in a duct or to fasten them with clamps. If not, the dangling condition, shift or inadvertent pulling of the cables may lead to damage to the module or cables, or a malfunction due to faulty cable connection.

[Wiring Precautions]

⚠ CAUTION
• When disconnecting a communication cable or power cable from the module, do not hold and pull the cable portion by hand. For the cable with a connector, hold the connector connected to the module with a hand and pull it out. For the cable connected to a terminal block, loosen the screws on the terminal block and disconnect the cable. Pulling the cable with it connected to the module may result in malfunctions or damage to the module and/or cables.

[Precautions on Activation/Maintenance]

⚠ CAUTION
• Do not disassemble or modify the module. Doing so may cause a fault, malfunction, injury or fire. • Be sure to shut off all phases of the external power supply used by the system before mounting or dismounting the module. Failure to do so may cause a fault or malfunction of the module. • Do not touch any terminal while the power is on. Doing so may cause malfunctions. • Be sure to shut off all phases of the external power supply used by the system before cleaning the module or retightening the terminal screws or module installation screws. Failure to do so may cause a fault or malfunction of the module. Loose tightening may cause a drop of the module, a short circuit or malfunctions. Excessive tightening may cause the same as the above due to damage to the screws or the module. • Before handling the module, always touch grounded metal, etc. to discharge static electricity from the human body. Failure to do so can cause the module to fail or malfunction.

[Precautions on Disposal]

⚠ CAUTION
• When disposing of this product, treat it as industrial waste.

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REVISIONS

* The manual number is given on the bottom left of the back cover.

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INTRODUCTION

Thank you for purchasing the MELSEC-Q series programmable logic controller (PLC). Before using the product, read this manual carefully to fully understand the functions and the performance of the PLC. Please forward a copy of this manual to the end user.

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Conformation to the EMC Directive and Low Voltage Instruction

For details on making our PLC conform to the EMC directive and Low Voltage Instruction when installing it in any other products, refer to Chapter 3, “EMV Directive and Low Voltage Instruction” of the User’s Manual (Hardware) of the PLC CPU.

The CE logo is printed on the rating plate on the main body of the PLC indicating its conformation to the EMC directive and Low Voltage Instruction.

To conform this product to the EMC Directive and Low Voltage Directive, refer to the Section of "CC-Link Modules" in Chapter 3 "EMC Directive and Low Voltage Directive" of the User's Manual (Hardware) of the CPU module used.

Generic Terms and Abbreviations

This manual uses the following generic terms and abbreviations except for the case where precise specification is required.

Generic Term/Abbreviation	Description
QJ61CL12	Indicates QJ61CL12 type CC-Link/LT master module
Master station	Station that controls data link system. One master station is required for each system.
Remote I/O station	Remote station that handles bit information only. (Inputs/outputs data to/from external devices) (CL2X8-D1B2, CL2Y8-TP1B2, etc.)
Remote device station	Remote station that handles bit unit and word unit data only. (Performs input and output with external devices, and analog data conversion.)
Remote station	Generic term for remote I/O station and remote device station. Controlled by the master station.
Master module	Module that controls the data link system. One master module is required for each system.
Remote I/O module	Remote module that handles bit unit data only. (Performs input and output with external devices.)
Remote device module	Remote module that handles bit unit and word unit data only. (Performs input and output with external devices, and analog data conversion.)
Remote module	Generic term for remote I/O module and remote device module.
QCPU (Q Mode)	Generic term for Q00JCPU, Q00CPU, Q01CPU, Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU, Q25HCPU, Q12PHCPU, Q25PHCPU
QCPU (A Mode)	Generic term for Q02CPU-A, Q02HCPU-A, Q06HCPU-A
GX Developer	Generic term for the product model SWnD5C-GPPW, SWnD5C-GPPW-A, SWnD5C-GPPW-V, SWnD5C-GPPW-VA
Intelligent function module	Q series module other than CPU, power supply and I/O modules, which are to be mounted on base unit
Dedicated power supply	Module connected for power supply to CC-Link/LT system. At least one power supply adapter is required for a system.
Power supply adapter	

Packing List

The packing list of QJ61CL12 is as shown below.

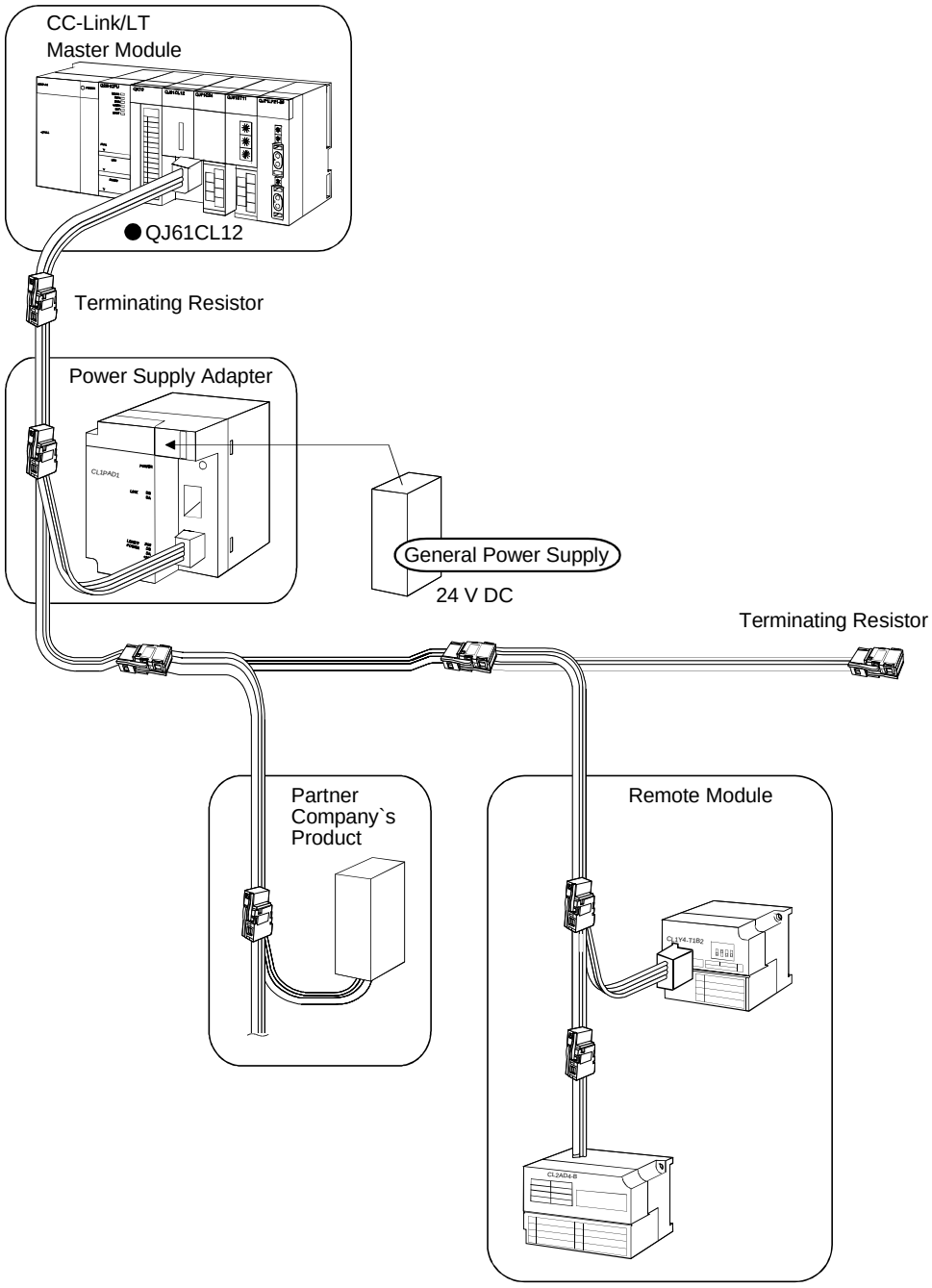
Item name	Quantity
QJ61CL12 Main Body	1

1 OVERVIEW

This manual describes about the QJ61CL12 type CC-Link/LT Master Module (hereinafter shown as QJ61CL12), including its specifications, names of the parts and the setting. The QJ61CL12 is designed for the use in combination with the MELSEC-Q series PLC CPU.

1.1 Overview

The CC-Link/LT is a line-saving network system designed for the use inside control boxes or devices, and you will be free from complicated or incorrect wiring.
Wiring among sensors, actuators and controllers can be easily saved and excellent performance such as high-speeded response time can be realized by this.



1 - 1

1.2 Features

The CC-Link/LT features the following:

(1) Easy connection/disconnection of communication cable

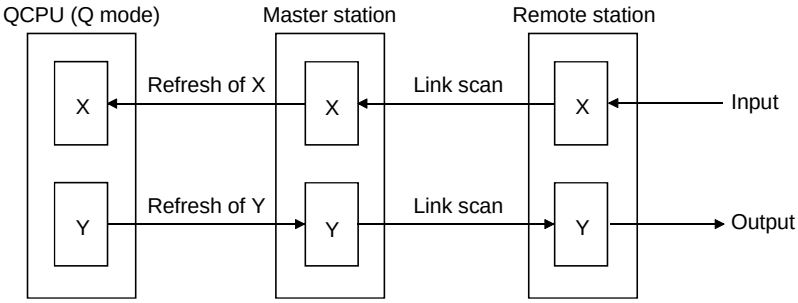
Because a dedicated connector enables simple connection/disconnection of the communication cables, modules can be easily added and/or replaced.
Using dedicated flat cables, VCTF cables and/or high flexible cables will decrease the wiring steps and save the cost of the cables.

(2) No parameter settings

To operate the CC-Link/LT system, no parameters are required to be set.

(3) Simplified programming

Since link devices of the CC-Link/LT are allocated to X/Y devices of the PLC CPU, you can create programs with X/Y devices only and not have to pay attention to the entire network.



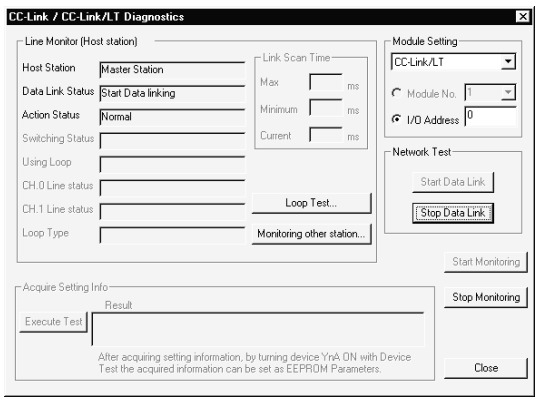
(4) Automatic setting of transmission rate

The transmission rate should be set on the master module only. No setting is required for remote stations.

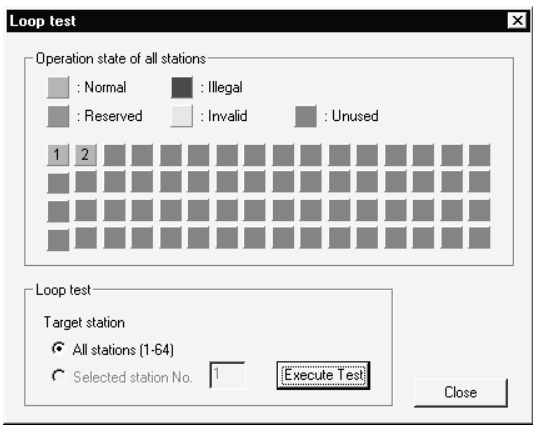
(5) CC-Link/LT diagnosis

Operating state of the master station, presence of faulty station and other states can be checked by CC-Link/LT diagnostics of the GX Developer and this enables easy maintenance of the system.

<Line Monitor [Host station] screen>



<Loop test screen>



(6) Specification of refresh range

Setting the last station number will stop refreshing for unconnected stations and reduce the link scan time.

(7) High speed refresh

High speed refreshing of 256 points for 0.5 ms can be achieved. (When 16 modules are connected in 16-point mode at a transmission rate of 2.5 Mbps)

(8) Point mode setting

Setting of “occupied points” and “numbers of I/O points” per station allows effective use of the I/O points.

(9) Bulk I/O control

The maximum of 2048 points (X: 1024; Y: 1024) can be controlled.

(10) Station detach function

Even if some module goes down due to an error, communications among normal modules can be continued.
However, cable breakage of the trunk line will disable the data link of all stations.

(11) Automatic return function

When the module isolated due to an error recovers its normal state, it will automatically return to the data link.

(12) Stop/restart of data link

You can stop and restart the module while the data link is being executed.

(13) Storing data by remote station type

Through the initial communication after powering on or adding a remote station, occupied points, I/O types or other information will be detected and stored in the buffer memory.

2 SYSTEM CONFIGURATION

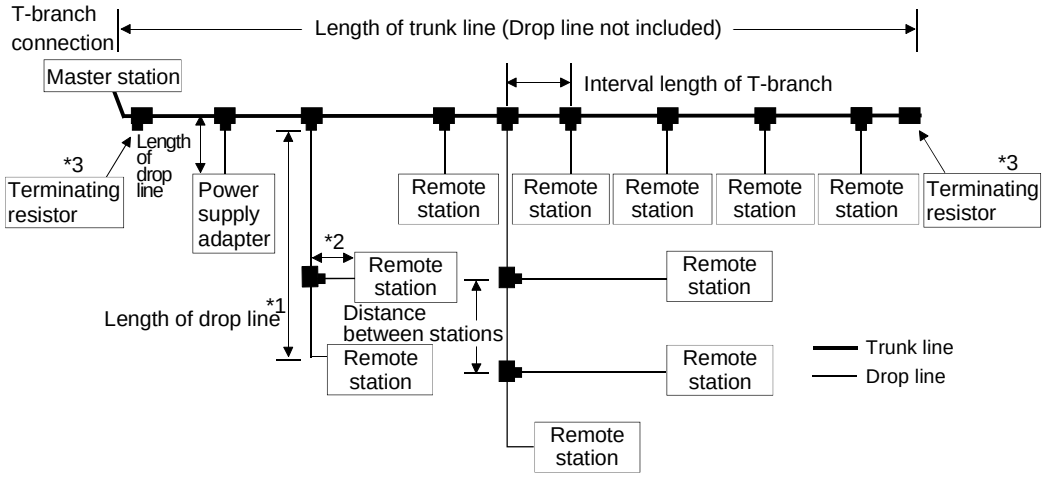
This section mainly describes the system configuration of the CC-Link/LT.

2.1 Overall Configuration

To one master station, up to 64 remote stations can be connected.
However, the conditions shown in Table 2.1 should be satisfied.

Table 2.1 Network Wiring Specifications

Item	Specifications			Remarks
Transmission rate	2.5 Mbps	625 kbps	156kbps	—
Distance between stations	Not limited			—
Max. no. of modules per drop line	8 modules			—
Length of trunk line	35 m	100 m	500 m	Cable length between terminating resistors. Length of drop lines not included
T-branch interval	Not limited			—
Max. length of drop line	4 m	16 m	60 m	Max. cable length for one branch line
Overall length of drop lines	15 m	50 m	200 m	Total length of all drop lines



*1: The length of the drop line includes the length of *2. (The maximum length of drop line and overall length of drop lines also include the length marked *2.)

*3: Refer to Section 4.5.4 for the terminating resistor installing method.

POINT

(1) The connection order of remote stations is not related with the station numbers.
(2) The remote station numbers are not necessarily consecutive. (Leaving any station number out does not cause data link failure.)

2.2 Applicable System

This section provides information on the available PLC CPU and notes on system configuration.

2.2.1 Applicable Modules and Numbers of Available Modules

(1) Applicable module and number of available modules

The following table shows the CPU modules and network modules (for remote I/O stations) applicable to the QJ61CL12 and the maximum numbers of modules that can be installed to each of them.

Applicable module		No. of available modules (*1)	Remarks
CPU module	Q00JCPU	Up to 16	(*2)
	Q00CPU Q01CPU	Up to 24	
	Q02CPU Q02HCPU Q06HCPU Q12HCPU Q25HCPU	Up to 64	Available in Q mode only (*2)
	Q12PHCPU Q25PHCPU	Up to 64	(*2)
Network module	QJ72LP25-25 QJ72BR15 QJ72LP25G	Up to 64	MELSECNET/H remote I/O station (*3)

*1 The number varies depending on the I/O points of the PLC CPU and the number of occupied I/O points set in QJ61CL12.

*2 Refer to the User's Manual (Function Explanation, Program Fundamentals) of the CPU module to be used.

*3 Refer to the Q corresponding MELSECNET/H Network System Reference Manual (Remote I/O Network).

(2) Base unit available for QJ61CL12

The QJ61CL12 can be installed to any I/O slot (*4) of a base unit. However, the power may be insufficient depending on the combination with other modules and the numbers of them. Be sure to check the capacity of the power supply when installing.

*4 Limited within the range of the number of I/O points of the CPU and network modules (for remote I/O stations).

(3) Application to multiple PLC system

When applying the QJ61CL12 to a multiple PLC system, see the QCPU (Q mode) User's Manual (Function Explanation, Program Fundamentals) in advance.

(a) QJ61CL12 available for multiple PLC system

Use the QJ61CL12 of function version B or later for the multiple PLC system.

(b) Parameters of intelligent function modules

Write the parameters of intelligent function modules to only the control CPU of QJ61CL12.

POINT
No QJ61CL12 product is released as function version A. Function version B includes the features of function version A.

(4) Applicable software package

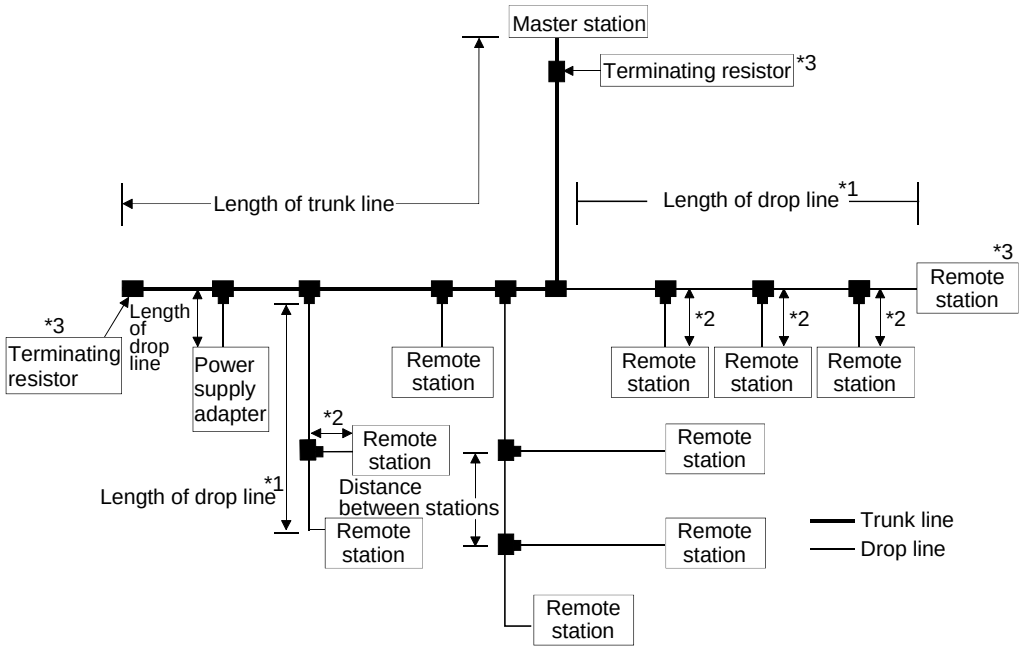
The systems and software packages available for the QJ61CL12 are shown below. When using the QJ61CL12, GX Developer is indispensable.

	Software version of GX Developer
When installing to Q00J/Q00/Q01CPU	Version 7 or later
When installing to Q02/Q02H/Q06H/Q12H/Q25HCPU	Version 4 or later
When installing to Q12PH/Q25PHCPU	Version 7.10L or later
When installing to multiple PLC system	Version 6 or later
When installing to MELSECNET/H remote I/O station	Version 6 or later
When executing CC-Link/LT diagnosis	Version 7.17T or later

2.2.2 Notes on System Configuration

(1) Position of QJ61CL12

Be sure to place the QJ61CL12 on the end of the trunk line.
It may seem to be placed at any other point than both ends of the trunk line in appearance because of application of the T-branch connection. Note that the length of the trunk line is defined as the length between two terminating resistors.

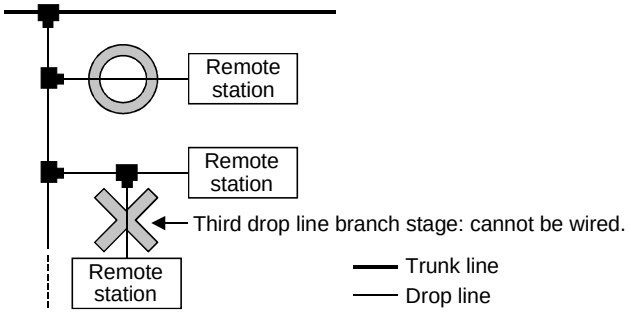


*1: The length of the drop line includes the length of *2. (The maximum length of drop line and overall length of drop lines also include the length marked *2.)

*3: Refer to Section 4.5.4 for the terminating resistor installing method.

(2) Number of drop line stages

The drop line in the CC-Link/LT system may be branched in up to two stages.
It cannot be branched in three or more stages.



(3) Conditions for setting of dedicated power supply or power supply adapter

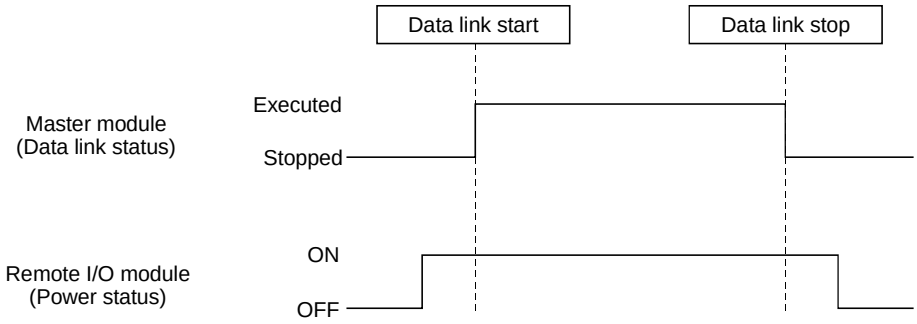
The conditions for the setting of a dedicated power supply or power supply adapter for the CC-Link/LT vary depending on the devices to be connected and the wiring length.
See the User's Manual of the dedicated power supply or power supply adapter for the conditions.

(4) Prevention of faulty input/output from remote I/O module

To prevent faulty input/output from remote I/O modules, pay attention to the following when designing the system.

(a) When power is ON or OFF

Turn ON the remote I/O module (Turn on the dedicated power supply or power supply adapter) before starting the data link.
Also, stop the data link before turning OFF the remote I/O module (Turning off the dedicated power supply or power supply adapter).



(b) Instantaneous power failure of remote I/O module

When instantaneous power failure occurs in the power source (24 V DC) for the remote I/O module, faulty data may be input.

1) Causes of faulty input due to instantaneous power failure

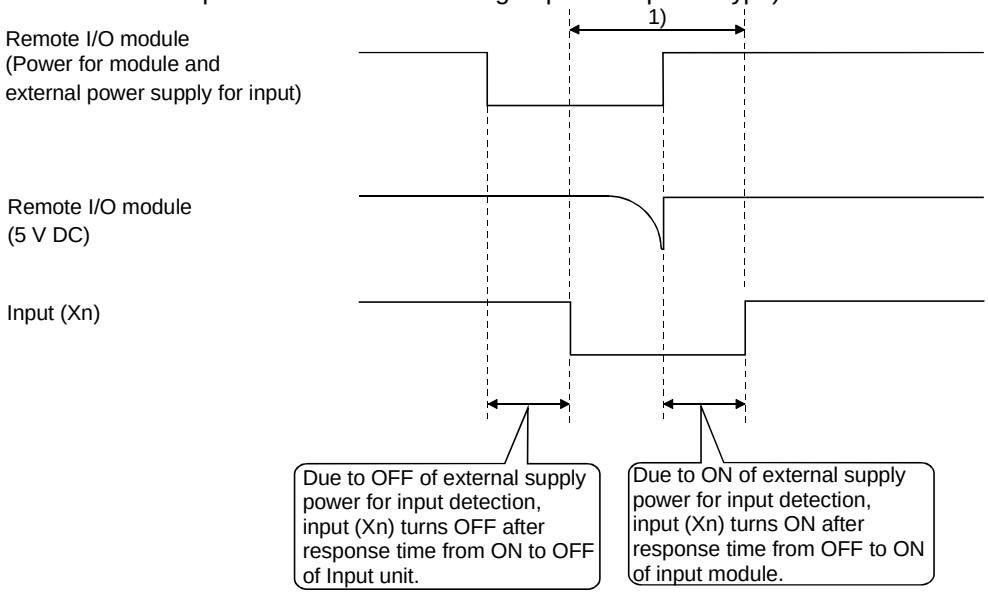
The hardware of the remote I/O module converts the supplied power of 24 V DC into 5 V DC inside the module and uses it for its own operation.

When instantaneous power failure occurs in the remote I/O module, the expression,

(Time until 5 V DC is turned OFF inside the remote I/O module)

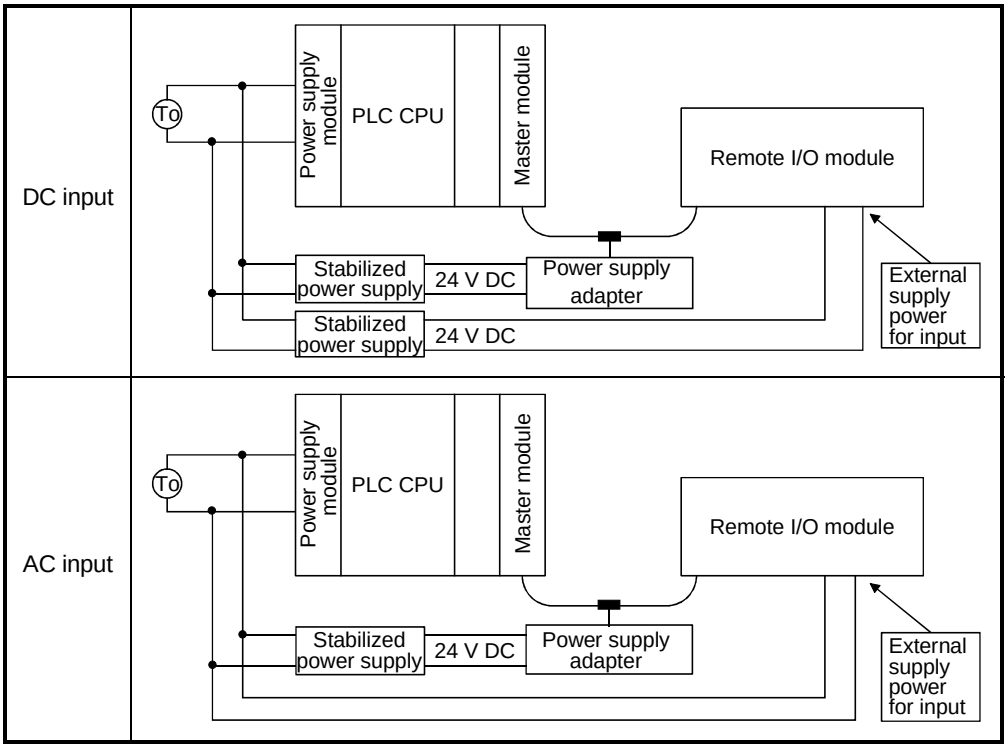
>(Response time from ON to OFF of the input unit), are formed.

Therefore, when the devices are refreshed within the time shown as (1), data will be erroneously input. (Especially, when the input response time is set to the high-speed response type)


1)
Remote I/O module
(Power for module and
external power supply for input)
Remote I/O module
(5 V DC)
Input (Xn)
Due to OFF of external supply power for input detection, input (Xn) turns OFF after response time from ON to OFF of Input unit.
Due to ON of external supply power for input detection, input (Xn) turns ON after response time from OFF to ON of input module.

2 - 5

2) Preventive measure against erroneous input
From the same power source, supply power to the power supply module, the stabilized power supply and the external power supply for input detection.



(5) Remote station for CC-Link not available for CC-Link/LT
It is not possible to connect the remote station for CC-Link to the QJ61CL12. When connected, the system may malfunction.

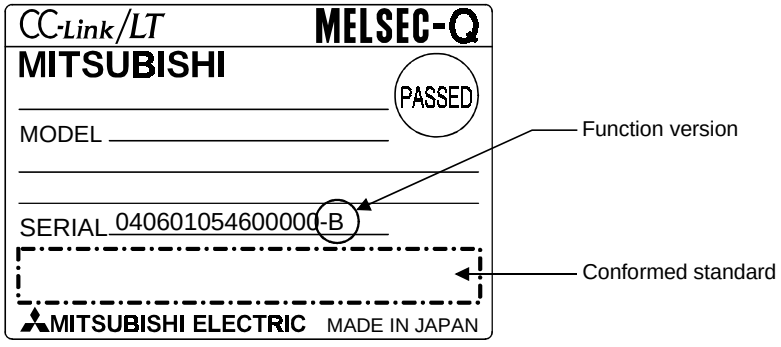
(6) Remote station for CC-Link/LT not available for CC-Link
It is not possible to connect the remote station for CC-Link/LT to the CC-Link master station. When connected, the system may malfunction.

2.2.3 Confirmation of Function Version

This section describes how to check the function version.

(1) How to check function version of QJ61CL12

(a) Checking the serial number on the rating plate on the side of the module.



(b) See Section 6.6 for checking method by using GX Developer.

3 SPECIFICATIONS

This chapter describes about specifications of the QJ61CL12.
For the general specifications of the QJ61CL12, refer to the User's Manual of the CPU module to be used.

3.1 Performance Specifications

The performance specifications are given in Table 3.1.

Table 3.1 Performance Specifications

Item				Specifications		
				4-point mode	8-point mode	16-point mode
Control spec.	Maximum link points (When the same I/O address is used)			256 points (512 points)	512 points (1024 points)	1024 points (2048 points)
	Link points per station (When the same I/O address is used)			4 points (8 points)	8 points (16 points)	16 points (32 points)
	Link scan time	When 32 stations connected	No. of points	128 points	256 points	512 points
			2.5 Mbps	0.7 ms	0.8 ms	1.0 ms
			625 kbps	2.2 ms	2.7 ms	3.8 ms
			156 kbps	8.0 ms	10.0 ms	14.1 ms
		When 64 stations connected	No. of points	256 points	512 points	1024 points
			2.5 Mbps	1.2 ms	1.5 ms	2.0 ms
			625 kbps	4.3 ms	5.4 ms	7.4 ms
			156 kbps	15.6 ms	20.0 ms	27.8 ms
Communication spec.	Transmission rate			2.5 Mbps/625 kbps/156 kbps		
	Communication method			BITR (Broadcastpolling + Interval Timed Response)		
	Communication path			T-branch type		
	Error control system			CRC		
	Maximum number of modules			64		
	Remote station No.			1 to 64		
	Installation position of master station			End of trunk line		
	RAS-oriented functions			Network diagnosis, Internal loopback diagnosis, Station detach function, Automatic return function		
	Connection cable *1			Dedicated flat cable (0.75mm^{2}X4)*5, VCTF cable*4, high flexible cable*5		
I/O occupied points *2				16, 32, 48, 64, 128, 256, 512, 1024 (I/O assignment: Intell.)		
5 V DC Internal current consumption				0.13 A		
24 V DC power supply *3		Voltage		20.4 to 28.8 V DC		
		Current consumption		0.028 A		
		Current on startup		0.070 A		
Weight				0.09 kg		

*1 Performance of the CC-Link/LT cannot be guaranteed for use of cables other than the dedicated flat cables, VCTF cables and high flexible cables.
*2 Set with the operation setting switch. (See Section 4.3.).
*3 Supplied through the dedicated power supply or power supply adapter.
*4 For VCTF cable specifications, see Table 3.2.
*5 Use the dedicated flat cables and high flexible cables accredited by the CC-Link Partner Association. (Refer to Section 4.2.3.)

Table 3.2 VCTF Cable Specifications (Extract from JIS C 3306)

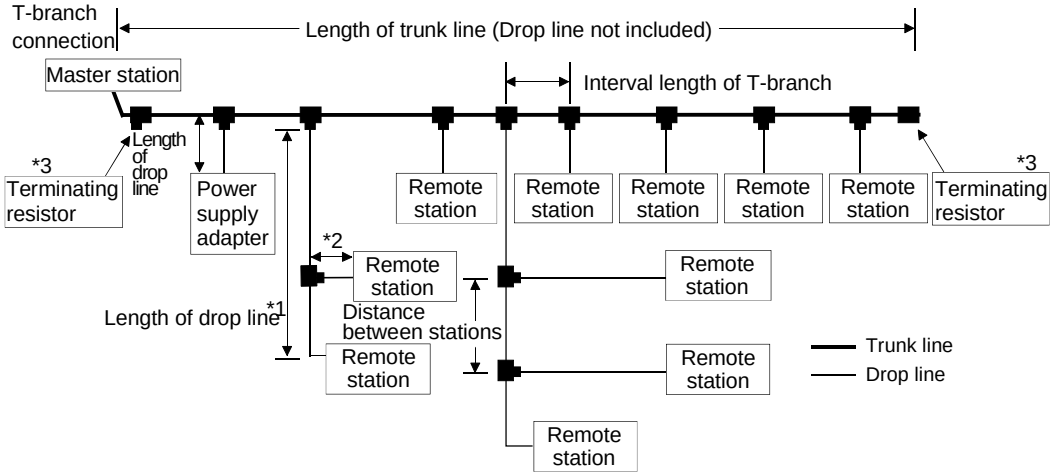
Type	No. of cores	Conductor			Insulator thickness	Sheath thickness	Conductor resistance (20 ℃)
		Nominal cross-sectional area	Composition No. of wires/wire diameter	Outside diameter			
Vinyl cabtyre, Round cord	4	0.75mm^2	30/0.18mm	1.1mm	0.6mm	1.0mm	25.1Ω /km

3.1.1 Network Wiring Specifications

The network wiring specifications of the CC-Link/LT are as shown below.

Table 3.3 Network Wiring Specifications

Item	Spec.			Remarks
Transmission rate	2.5 Mbps	625 kbps	156 kbps	—
Distance between stations	Not limited			—
Max. No. of stations on a drop line	8			—
Length of trunk line	35 m	100 m	500 m	Cable length between 2 terminating resistors (Drop line length not included)
T-branch interval	Not limited			—
Max. length of drop line	4 m	16 m	60 m	Cable length per branch line
Overall length of drop lines	15 m	50 m	200 m	Total length of all drop lines



*1: The length of the drop line includes the length of *2. (The maximum length of drop line and overall length of drop lines also include the length marked *2.)

*3: Refer to Section 4.5.4 for the terminating resistor installing method.

3 - 2

3.2 I/O Signals to/from PLC CPU

This section describes Input/Output (I/O) signals of the QJ61CL12 to/from the PLC CPU.
Input signals (X) or output signals (Y) are allocated to the area of the Remote Input or the Remote Output respectively. No I/O signals are required to activate the QJ61CL12.
The assignment of I/O signals varies depending on the point mode setting.
In the following Table 3.3 to 3.5, "n" represents the start I/O number of the QJ61CL12.

[Example]
When the start I/O number of the QJ61CL12 is "X/Y30":
Xn0 to XnF→X30 to X3F
Yn0 to YnF→Y30 to Y3F

POINT

When the number of I/O points occupied is set exceeding the maximum number of link points in the 4-point or 8-point mode, the excessive I/O points cannot be used.
Example) When setting as follows:
Point mode:4-point mode; No. of I/O point occupied:1024;
The QJ61CL12 occupies 1024 points of I/O for the PLC CPU, however, available link points are 256 (Max. link points for 4-point mode are 256) and the remaining points of 768 are not possible to be used.

3.2.1 I/O Signals in 4-Point Mode Setting

List of the I/O signals in the 4-point mode setting is shown in Table 3.4.

Table 3.4 List of I/O Signals in 4-point Setting

Input No.	Remote Input (X)															
	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
XnF to Xn0	Station No.4				Station No.3				Station No.2				Station No.1			
to	to															
X (n+F) F to X (n+F) 0	Station No.64				Station No.63				Station No.62				Station No.61			
Output No.	Remote Output (Y)															
	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
YnF to Yn0	Station No.4				Station No.3				Station No.2				Station No.1			
to	to															
Y (n+F) F to Y (n+F) 0	Station No.64				Station No.63				Station No.62				Station No.61			

3.2.2 I/O Signals in 8-Point Mode Setting

List of the I/O signals in the 8-point mode setting is shown in Table 3.5.

Table 3.5 List of I/O Signals in 8-point Setting

Input No.	Remote Input (X)															
	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
XnF to Xn0	Station No.2								Station No.1							
to	to															
X (n+1F) F to X (n+1F) 0	Station No.64								Station No.63							
Output No.	Remote Output (Y)															
	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
YnF to Yn0	Station No.2								Station No.1							
to	to															
Y (n+1F) F to Y (n+1F) 0	Station No.64								Station No.63							

3.2.3 I/O Signals in 16-Point Mode Setting

List of the I/O signals in the 16-point mode setting is shown in Table 3.6.

Table 3.6 List of I/O Signals in 16-point Setting

Input No.	Remote Input (X)															
	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
XnF to Xn0	Station No.1															
to	to															
X (n+3F) F to X (n+3F) 0	Station No.64															
Output No.	Remote Output (Y)															
	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
YnF to Yn0	Station No.1															
to	to															
Y (n+3F) F to Y (n+3F) 0	Station No.64															

3.3 Buffer Memory

The buffer memory is used for data communication between the QJ61CL12 and the PLC CPU and is read or written by GX Developer or sequence programs.
When the system is powered OFF or the PLC CPU is reset, the contents of the buffer memory will return to the default setting.

3.3.1 List of Buffer Memory

The list of the buffer memory is shown in Table 3.7.

Table 3.7 List of Buffer Memory

Address		Item	Availability	Reference
DEC	HEX			
0 to 3	0H to 3H	Information of remote station connection	Read only	Sec.3.3.2 (1)
4 to 7	4H to 7H	Information of faulty station	Read only	Sec.3.3.2 (2)
8 to 11	8H to BH	Remote I/O error information	Read only	Sec.3.3.2 (3)
12 to 15	CH to FH	Prohibited*	—	—
16	10H	Detailed error information	Readable/Writable	Sec.3.3.2 (4)
17	11H	External switch information	Read only	Sec.3.3.2 (5)
18	12H	Information of operating states	Read only	Sec.3.3.2 (6)
19	13H	Data link stop/restart instructions	Writable	Sec.3.3.2 (7)
20	14H	Information of last station of data link	Read only	Sec.3.3.2 (8)
21 to 31	15H to 1FH	Prohibited*	—	—
32	20H	Detailed remote station information (Station No. 1)	Read only	Sec.3.3.2 (9)
to	to	to		
95	5FH	Detailed remote station information (Station No.64)		
96 to	60H to	Prohibited*	—	—

* Do not write to the prohibited area. Doing so may cause an error.

3.3.2 Details of Buffer Memory

This section describes the details of each item given in Table 3.7 in Section 3.3.1.

(1) Information of remote station connection (Buffer memory address 0 - 3: Un\G0 – 3)

The remote stations connected to the line are detected and the information on the connection condition is stored in this area.

Address (Decimal)	b15	b14	b13	to	b2	b1	b0
0	Station No.16	Station No.15	Station No.14	to	Station No.3	Station No.2	Station No.1
1	Station No.32	Station No.31	Station No.30	to	Station No.19	Station No.18	Station No.17
2	Station No.48	Station No.47	Station No.46	to	Station No.35	Station No.34	Station No.33
3	Station No.64	Station No.63	Station No.62	to	Station No.51	Station No.50	Station No.49

0: No remote station connected
1: Remote station connected

(2) Information of faulty station (Buffer memory address 4 - 7: Un\G4 – 7)

The data link states of remote stations are stored in this area.

Address (Decimal)	b15	b14	b13	to	b2	b1	b0
4	Station No.16	Station No.15	Station No.14	to	Station No.3	Station No.2	Station No.1
5	Station No.32	Station No.31	Station No.30	to	Station No.19	Station No.18	Station No.17
6	Station No.48	Station No.47	Station No.46	to	Station No.35	Station No.34	Station No.33
7	Station No.64	Station No.63	Station No.62	to	Station No.51	Station No.50	Station No.49

0: Normal
1: Data link error

(3) Remote I/O error information (Buffer memory address 8 - 11: Un\G8 – 11)

Information on remote I/O error of each remote station executing data link is stored in this area.
For individual errors, see the related manual for the remote station.

Address (Decimal)	b15	b14	b13	to	b2	b1	b0
8	Station No.16	Station No.15	Station No.14	to	Station No.3	Station No.2	Station No.1
9	Station No.32	Station No.31	Station No.30	to	Station No.19	Station No.18	Station No.17
10	Station No.48	Station No.47	Station No.46	to	Station No.35	Station No.34	Station No.33
11	Station No.64	Station No.63	Station No.62	to	Station No.51	Station No.50	Station No.49

0: No remote I/O Error identified
1: Remote I/O error identified

(4) Detailed error information (Buffer memory address 16: Un\G16)

Detailed information on errors detected by the master station is stored in this area. When an error is detected in a station outside the control range, b3 will be latched. Writing “1” to this area (b3) clears the error information of the station.

Bit	Item	Contents
b0	Data link failure	0: Data link normal 1: One or more faulty station in data link identified
b1	All stations failed	0: One or more normal data link station identified 1: All stations are faulty
b2	Remote I/O error	0: No remote I/O error 1: One or more faulty remote I/O station
b3	Error of station outside control range	0: No error 1: Remote station(s) set to the station number higher than the last of refresh range
b4	Point mode setting error	0: Normal 1: Point mode switch set outside valid range
b5	Transmission rate setting error	0: Normal 1: Transmission rate setting switch set outside valid range
b6	Switching during operation	0: No switching 1: Switching identified
b14 to b7	Vacant	—
b15	Hardware failure	0: Normal 1: Failure identified by self-loopback test

(5) External switch information (Buffer memory address 17: Un\G17)

Information of setting of I/O points occupied, transmission rate setting, point mode setting and setting status of each switch in test mode is stored in this area.

Bit	Item	Contents
b2 to b0	Setting of I/O points occupied	Status of operation setting switch SW3 – SW1 000: 16 pts. 001: 32 pts. 010: 48 pts. 011: 64 pts. 100: 128 pts. 101: 256 pts. 110: 512 pts. 111:1024 pts
b4, b3	Transmission rate setting	Status of operation setting switch SW5, SW4 00: 156 kbps 01: 625 kbps 10: 2.5 Mbps 11: Setting not allowed
b6, b5	Point mode setting	Status of operation setting switch SW7, SW6 00: 8-point mode 01: 4-point mode 10: 16-point mode 11: Setting not allowed
b7	Test mode	Status of operation setting switch SW8 0: Under usual conditions 1: When self-loopback test being executed
b15 to b8	Vacant	—

0: Switch OFF
1: Switch ON

(6) Information of operating states (Buffer memory address 18: Un\G18)

Operating states of the QJ61CL12 are stored in this area.

Bit	Item	Contents
b0	Data link states	0: Data link stopped 1: Data link being executed
b1	Initial communication states	0: Initial communication not complete 1: Initial communication completed
b15 to b2	Vacant	—

(7) Data link stop/restart instructions (Buffer memory address 19: Un\G19)

Stop and restart of data link are controlled by data of this area. When stop and restart of data link are requested at the same time, the stop request precedes the restart.

Bit	Item	Contents	Initial value
b0	Data link stop	0: Data link stop not requested 1: Data link stop requested	0
b14 to b1	Vacant	—	—
b15	Data link restart	0: Data link restart not requested 1: Data link restart requested	0

(8) Information of last station of data link (Buffer memory address 20: Un\G20)

The last number of the data-link-available remote stations is stored in this address.

Bit	Item	Contents
b6 to b0	Last number of data link stations	Last number of data-link-available remote stations is stored
b15 to b7	Vacant	—

POINT

- The values of this buffer memory vary depending on the setting of I/O points occupied, point mode setting, and last station number setting of the intelligent function module switch.
- When a remote station, which station number is greater than the value of the buffer memory, is connected, an error of station outside control range will be detected.

(9) Detailed remote station information (Buffer memory address 32 - 95: Un\G32 – 95)

Information about each remote station is stored in each of these addresses.

Bit	Item	Contents
b2 to b0	I/O points *1	000: 1 pts. 001: 2 pts. 010: 4 pts. 011: 8 pts. 100: 16 pts.
b3	Output flag *2	0: No output 1: Output identified
b4	Input flag *2	0: No input 1: Input identified
b5	Remote device station flag	0: Remote I/O station 1: Remote device station
b6	First station flag *3	0: Not first station 1: First station
b7	Input filter setting	0: Standard input (No setting) 1: High-speed input
b8	Clear of output/ Hold setting	0: Clear (No setting) 1: Hold
b15 to b9	Vacant	—

*1 For I/O modules, the input or output points are stored.
Example) In the case of CL1XY2-DT1D5S, "1 point" is applied.

*2 The combination of b4 and b3 indicates the presence of the "remote input signal" and "remote output signal" of the connected remote station.
Example) In the case of the remote I/O station for input and output use, b4 and b3 will form "11". In the case of the one for input use, they will form "10".

*3 For a module that has 2 or more occupied stations, only the bit of the first station will turn on.

3.4 Concept of Control Point (Point Mode Setting and I/O Point Setting)

This section describes concept of the point mode setting and I/O point setting, which is required for system configuration.
By the point mode setting, the number of points that the system can control is set to each remote station.
There are 3 kinds of point modes: 4-point, 8-point and 16-point modes. Even in the same number setting of the I/O points occupied, the number of controllable remote stations will vary depending on the point mode setting.
Note that, when connecting a remote device station to the system, use the 16-point mode.

3.4.1 Simplified Setting

This section describes simple setting by which a point mode and I/O points occupied can be set.
According to the I/O points of the remote station, set the proper points and the mode shown in the following Table.

Remote station I/O points	Setting of I/O points occupied for QJ61CL12	Point mode setting for QJ61CL12
256 or less	16 points	4-point mode
	32 points	
	64 points	
	128 points	
	256 points	
257 to 512 points	512 points	8-point mode
513 to 1024 points	1024 points	16-point mode

3.4.2 Advanced Setting

This section describes the advanced setting method of the point mode and the I/O points occupied.

(1) Even if the same I/O points occupied is set, the number of controllable remote stations varies depending on which point mode is selected.
The table below shows the relation among the I/O point setting, point mode setting and number of stations that can be connected

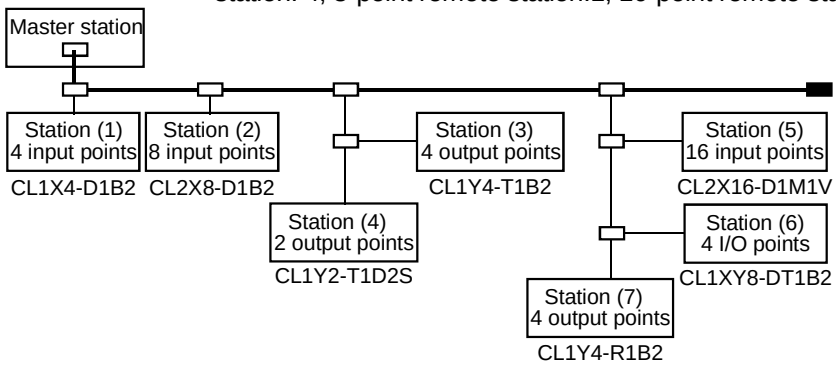
I/O occupied point setting		16 pts.	32 pts.	48 pts.	64 pts.	128 pts.	256 pts.	512 pts.	1024 pts.
Point mode setting	4-point mode	4 stations	8 stations	12 stations	16 stations	32 stations	64 stations	64 stations	64 stations
	8-point mode	2 stations	4 stations	6 stations	8 stations	16 stations	32 stations	64 stations	64 stations
	16-point mode	1 stations	2 stations	3 stations	4 stations	8 stations	16 stations	32 stations	64 stations

POINT

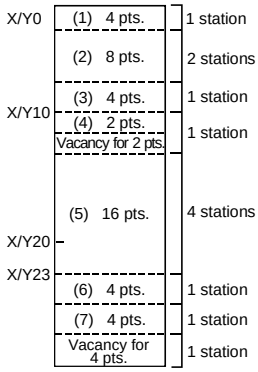
When the number of I/O points occupied is set exceeding the maximum number of link points in the 4-point or 8-point mode, the excessive I/O points cannot be used.
Example) When setting as follows:
Point mode:4-point mode; No. of I/O point occupied:1024;
The QJ61CL12 occupies 1024 points of I/O for the PLC CPU, however, available link points are 256 (Max. link points for 4-point mode are 256) and the remaining points of 768 are not possible to be used.

(2) The number of occupied stations for a remote module varies depending on the point mode.
For a 16-point module, the setting in the 4-pont, 8-point or 16-point mode makes it occupy 4, 2 or 1 station(s) respectively.

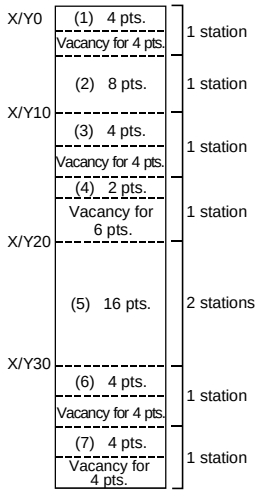
(3) The desirable selection of the point mode is dependent on the points of the remote module to be used. Generally, setting the point mode in accordance to the points of the module that are used the most in the system can reduce useless points.
A setting example is as follows.
Example) In the system including: 2-point remote station:1, 4-point remote station: 4, 8-point remote station:1, 16-point remote station:1



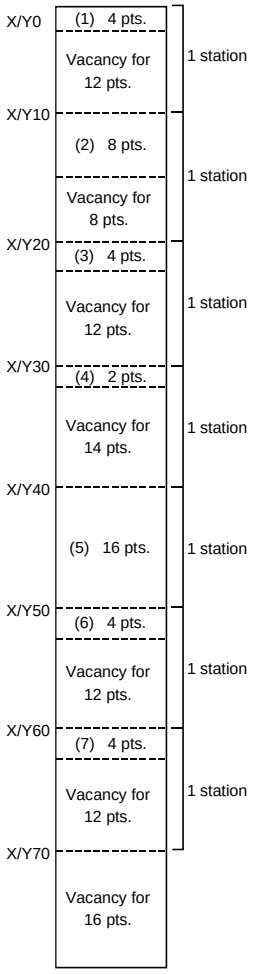
■ 4-point mode (4 pts./station)
I/O occupied points: 48
Total no. of stations : 12



■ 8-point mode (8 pts./station)
I/O occupied points: 64
Total no. of stations : 8



■ 16-point mode (16 pts./station)
I/O occupied points: 128
Total no. of stations : 7

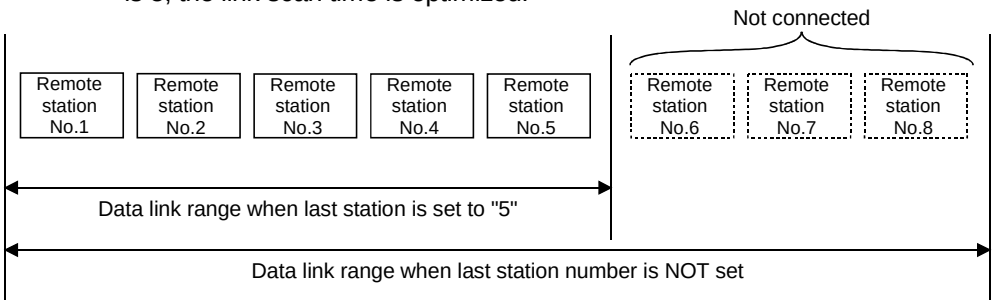


(4) For the assignment of the I/O numbers, how to use the assignment sheet included in this manual is shown below. This is an example case of the preceding section (3), and the point mode and the number of I/O points occupied are set to 8-point mode and 64 points respectively.

Station No.	Model Name	Input	Output	Station No.	Model Name	Input	Output
1	CL1X4-D1B2	X 00	Y 0	5	CL2X16-D1M1V (2 stations occupied)	X 20	Y 0
		01	1			21	1
		02	2			22	2
		03	3			23	3
		4	4			24	4
		5	5			25	5
		6	6			26	6
		7	7			27	7
2	CL2X8-D1B2	X 08	Y 8	6	〃	X 28	Y 8
		09	9			29	9
		0A	A			2A	A
		0B	B			2B	B
		0C	C			2C	C
		0D	D			2D	D
		0E	E			2E	E
		0F	F			2F	F
3	CL1Y4-T1B2	X 0	Y 10	7	CL1XY8-DT1B2	X 30	Y 30
		1	11			31	31
		2	12			32	32
		3	13			33	33
		4	4			4	4
		5	5			5	5
		6	6			6	6
		7	7			7	7
4	CL1Y2-T1D2S	X 8	Y 18	8	CL1Y4-R1B2	X 8	Y 38
		9	19			9	39
		A	A			A	3A
		B	B			B	3B
		C	C			C	C
		D	D			D	D
		E	E			E	E
		F	F			F	F

3.5 Concept of Last Station Number Setting

The last station number is set to ensure the data link to be executed to the last remote station and not to link to unconnected stations.
This setting is not essential, however, it is desirable to optimize the link scan time of the system.
For the setting, see Section 4.4.
Example) By setting to 16-point mode and I/O occupied points of 128, and by setting "5" to the last station number if the number of the connected remote stations is 5, the link scan time is optimized.


Not connected
Remote station No.1
Remote station No.2
Remote station No.3
Remote station No.4
Remote station No.5
Remote station No.6
Remote station No.7
Remote station No.8
Data link range when last station is set to "5"
Data link range when last station number is NOT set

3.6 Condition of Each Station in Case of Failure

When a failure occurs in the system, conditions of each station will be as shown in Table 3.8.

Table 3.8 Condition of Each Station in Case of Failure

Data link status	Master station		Remote station	
	Remote input	Remote output	Input	Output
When PLC CPU of master station is faulty and stopped (Data link stopped)	Maintained	Maintained	Continued *1	Maintained/OFF *2
When remote station is faulty (e.g. Data link error) (Data link continued)	Input from faulty remote station is cleared	Continued	Continued *1	Maintained/OFF *2
When remote station is de-energized (Data link continued)	Input from de-energized remote station is cleared	Continued	Depends on external signals	All OFF

*1 Although external data will be input (Input LED indicator lit), data cannot be sent to the master station.
*2 The condition is different depending on the output hold setting of the remote station.

3.7 Data Link Processing Time

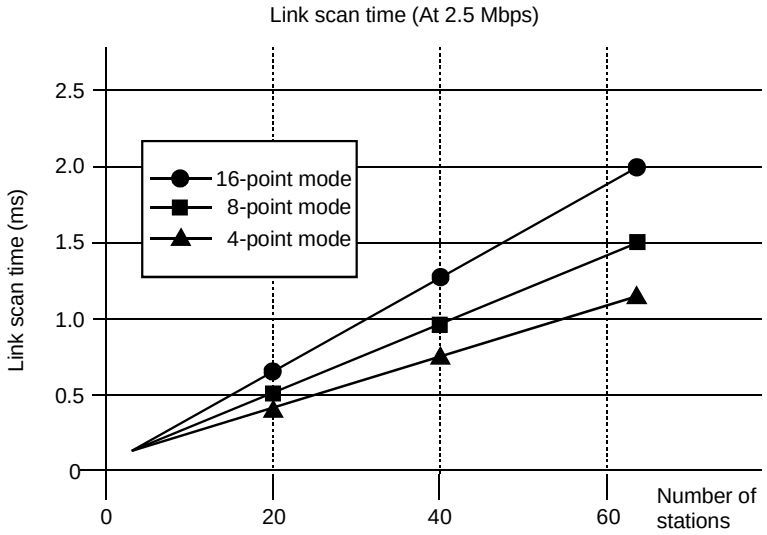
This section describes about the link scan time and transmission delay time.

3.7.1 Link Scan Time

The link scan time of the CC-Link/LT is explained as follows:

[Link scan time (LS)]
LS = a + (b x N) x c [μs]
a: Constant
b: Constant
c: Constant
N: Last station number

Transmission rate		2.5 Mbps	625 kbps	156 kbps
a		22	88	353
b	4-point mode	46	41	37
	8-point mode	56	51	47
	16-point mode	76	71	67
c		0.4	1.6	6.4



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3.7.2 Transmission Delay Time

The Transmission delay time (Time taken for data to reach the destination) is explained in this section.

(1) Master Station ← Remote Station (Input)

Time from the point that signals are input to a remote station to the point that the device (X) of the CPU turns ON/OFF, is obtained from the formula as shown below.

[Formula]
SM x 2 + (2 – n)*1 x LS + Input response time of remote station (ms)
SM: Sequence program scan time of master station
LS: Link scan time (See Section 3.7.1)
n: Values of (SM/LS) after omitting figures below decimal point
*1: 0 if the value is 0 or less.
(Example) When the master station's sequence scan time is 5 ms, the link scan time is 1.2 ms, and the input response time of remote I/O station is 1.5 ms:
SM x 2 + (2 – n)*1 x LS + Input response time of remote station (ms)
= 5 x 2+ (2 – 4)*1 x 1.2 + 1.5 [n = 4 (5/1.2 = 4.16 •••, Omitting figures below decimal point)]
= 11.5 [ms]

(2) Master Station → Remote Station (Output)

Time from the point that the CPU's device (Y) turns ON(OFF) to the point that the remote station's output turns ON (OFF) is obtained from the formula shown below.

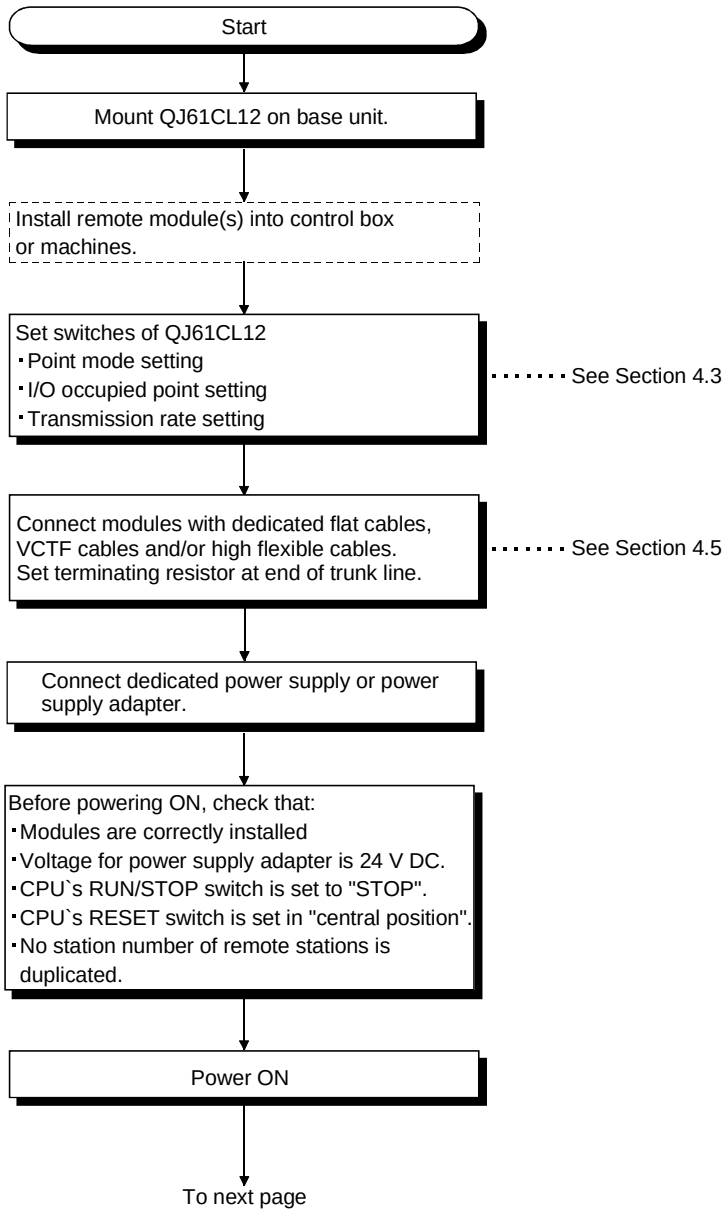
[Formula]
SM + LS x 2 + Output response time of remote station (ms)
SM: Sequence program scan time of master station
LS: Link scan time (See Section 3.7.1)
(Example) When the master station's sequence scan time is 5 ms, the link scan time is 1.2 ms, and the output response time of remote I/O station is 0.5 ms:
SM + LS x 2 + output response time of remote I/O station (ms)
= 5 + 1.2 x 2+ 0.5
= 7.9 [ms]

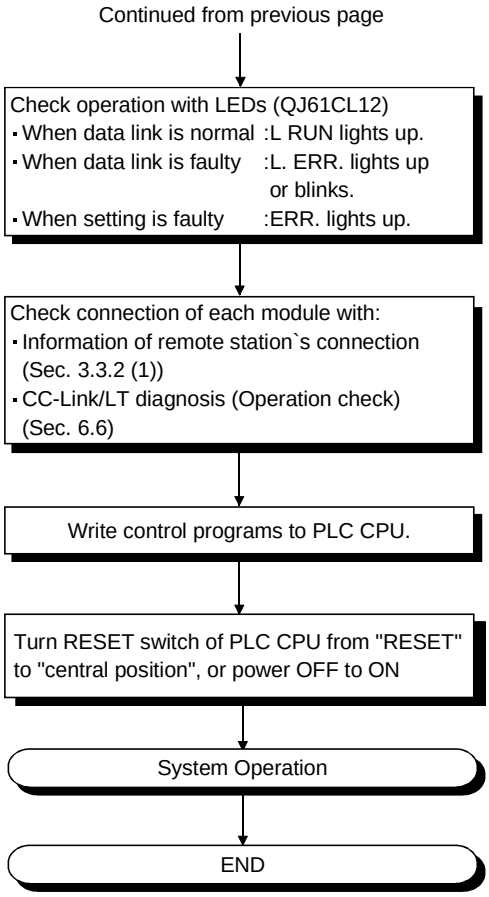
4 PREPARATORY PROCEDURES FOR DATA LINK

Procedures from the installation of the module to the start of data link are given in this section.

4.1 Procedures for Data Link

The following steps should be performed for data link of the CC-Link/LT.


Start
Mount QJ61CL12 on base unit.
Install remote module(s) into control box or machines.
Set switches of QJ61CL12
・Point mode setting
・I/O occupied point setting
・Transmission rate setting
See Section 4.3
Connect modules with dedicated flat cables, VCTF cables and/or high flexible cables.
Set terminating resistor at end of trunk line.
See Section 4.5
Connect dedicated power supply or power supply adapter.
Before powering ON, check that:
・Modules are correctly installed
・Voltage for power supply adapter is 24 V DC.
・CPU`s RUN/STOP switch is set to "STOP".
・CPU`s RESET switch is set in "central position".
・No station number of remote stations is duplicated.
Power ON
To next page


Continued from previous page
Check operation with LEDs (QJ61CL12)
• When data link is normal :L RUN lights up.
• When data link is faulty :L. ERR. lights up or blinks.
• When setting is faulty :ERR. lights up.
Check connection of each module with:
• Information of remote station`s connection (Sec. 3.3.2 (1))
• CC-Link/LT diagnosis (Operation check) (Sec. 6.6)
Write control programs to PLC CPU.
Turn RESET switch of PLC CPU from "RESET" to "central position", or power OFF to ON
System Operation
END

POINT

(1) If some station number is duplicated, the station may malfunction (faulty input/output).

(2) Depending on the combination of the point mode setting and the number of I/O points for the remote station used, multiple station numbers may be assigned. Carefully check if the station number of the remote station of 8 or more I/O points is not duplicated with the number of the next station.

(3) When changing the operation setting switches of the master or remote stations while the system is ON, be sure to turn OFF and ON the power of the entire system.

4 - 2

4.2 Installation

This section describes handling precautions on the steps from the unpacking to the installation of the QJ61CL12.
For more details on the module installation, refer to the User's Manual of your PLC CPU.

4.2.1 Handling Precautions

(1) The module is mode of resin. Do not drop or give it a strong impact.
(2) Do not remove the PCB (printed-circuit board) from the case. Doing so may cause failure.
(3) When wiring, be careful not to let foreign matter such as wiring chips enter the module inside. Remove it if this happens.
(4) The top surface of the module is covered with a protective film to prevent foreign matter such as wiring chips from entering the module during wiring.
Do no remove the film until the wiring is complete.
Before starting the system, be sure to remove the film to provide adequate heat ventilation.
(5) Tighten the module fixing screws within the torque range shown below.

Screws	Tightening torque range
Module fixing screws (M3 screws)	0.36 to 0.48 N·m

POINT

When removing the terminating resistor due to any system modification, be sure to power OFF the system. Removing/Installing the terminating resistor with the power ON may cause malfunctions (faulty input/output).

4.2.2 Installation Environment

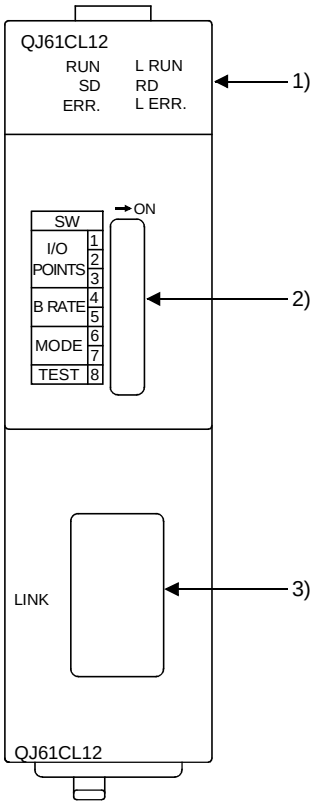
For the environment appropriate for installation, refer to the User's Manual of your PLC CPU.

4.2.3 Cables, Connectors and Terminating Resistors

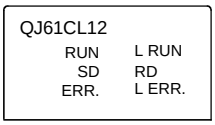
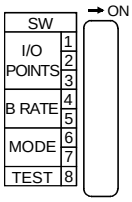
For inquiries about the cables, connectors and/or terminating resistors,
access the home page of the CC-Link Partner Association on the Internet at
http://www.cc-link.org/.

4.3 Name of Parts and Setting

This section describes the names of the parts, LED indications and setting methods of the switches.



4 - 4

<table>
<tr><th>No.</th><th>Item</th><th>Contents</th></tr>
<tr><td>(1)</td><td>LED indicator
 
</td><td>Module condition is checked with LED status.
<table>
<tr><th>LED</th><th>Description</th></tr>
<tr><td>RUN</td><td>ON: Module operating normally
OFF: Fault in hardware</td></tr>
<tr><td>ERR.</td><td>ON: Faulty switch setting
Blink: Switched during operation</td></tr>
<tr><td>L RUN</td><td><Usually>
ON: Data link being executed
OFF: Data link stopped
<In test mode>
ON: Self-loopback test resulted in normal
OFF: Self-loopback test failure</td></tr>
<tr><td>L ERR.</td><td><Usually>
ON: Faulty data link station or station outside control range detected
Blink: Date link failure at all stations
<In test mode>
ON: Self-loopback test failure
OFF: Self-loopback test resulted in normal</td></tr>
<tr><td>SD</td><td>ON: Data being transmitted</td></tr>
<tr><td>RD</td><td>ON: Data being received</td></tr>
</table></td></tr>
<tr><td>(2)</td><td>Operation setting switch
 
</td><td>Setting I/O points occupied, transmission rate, etc of QJ61CL12 (Factory setting: OFF)
<table>
<tr><td rowspan="14">Operation setting switches</td><td>I/O points occupied</td><td></td><td>16 pts.</td><td>32 pts.</td><td>48 pts.</td><td>64 pts.</td><td>128 pts.</td><td>256 pts.</td><td>512 pts.</td><td>1024 pts.</td></tr>
<tr><td>1</td><td rowspan="3">I/O POINTS</td><td>OFF</td><td>ON</td><td>OFF</td><td>ON</td><td>OFF</td><td>ON</td><td>OFF</td><td>ON</td></tr>
<tr><td>2</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td></tr>
<tr><td>3</td><td>OFF</td><td>OFF</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td><td>ON</td><td>ON</td></tr>
<tr><td>Transmission rate setting</td><td></td><td colspan="2">156kbps</td><td colspan="2">625kbps</td><td colspan="2">2.5Mbps</td><td colspan="2">Setting prohibited*</td></tr>
<tr><td>4</td><td rowspan="2">B RATE</td><td colspan="2">OFF</td><td colspan="2">ON</td><td colspan="2">OFF</td><td colspan="2">ON</td></tr>
<tr><td>5</td><td colspan="2">OFF</td><td colspan="2">OFF</td><td colspan="2">ON</td><td colspan="2">ON</td></tr>
<tr><td>Point mode setting</td><td></td><td colspan="2">8-point mode</td><td colspan="2">4-point mode</td><td colspan="2">16-point mode</td><td colspan="2">Setting prohibited*</td></tr>
<tr><td>6</td><td rowspan="2">MODE</td><td colspan="2">OFF</td><td colspan="2">ON</td><td colspan="2">OFF</td><td colspan="2">ON</td></tr>
<tr><td>7</td><td colspan="2">OFF</td><td colspan="2">OFF</td><td colspan="2">ON</td><td colspan="2">ON</td></tr>
<tr><td>Test mode</td><td colspan="9"></td></tr>
<tr><td>8</td><td>TEST</td><td colspan="8">OFF: ON LINE (Normal operation)
ON : Test mode (Self-loopback test)</td></tr>
</table>
* When the switch is set to this, ERR. LED will light up</td></tr>
<tr><td>(3)</td><td>CC-Link/LT Interface connector</td><td>Connector for CCLink/LT communication line connection</td></tr>
</table>

POINT

The settings of operation setting switches become valid when the module is turned ON from OFF or when the PLC CPU is reset. When any of settings are changed with the module powered ON, “ERR.” LED will blink. In this case, turn OFF and restart the system.

4.4 Switch Setting of Intelligent Function Module

The switch setting of the intelligent function module is performed in "I/O assignment settings" of GX Developer.

(1) Setting Item

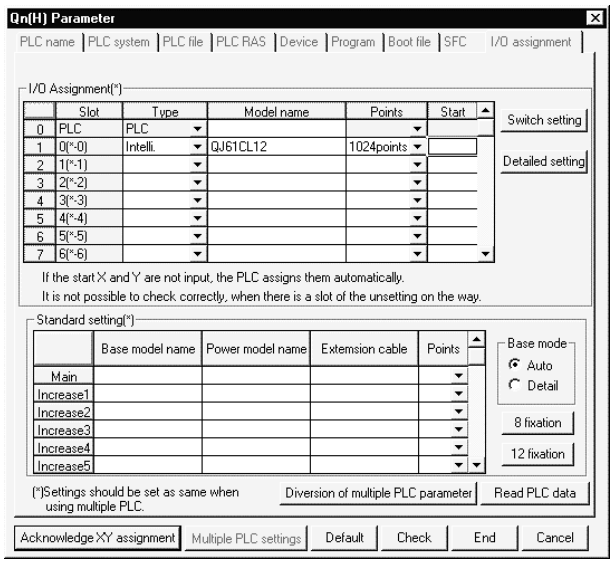
Switches 1 through 5 are provided for the intelligent function module and 16-bit data are used for the settings. When the intelligent function module switch setting is not set, the default for Switch 1 is 0.

	Setting item	
Switch 1	Last station number setting	Set the last number of the stations that execute data link. This setting disables data link processing for non-connected stations, reducing link refresh time. (See Sec.3.5) When the last number exceeds the number of connectable stations (see Sec.3.4.2), the setting is ignored. <Setting range> 1 to 64 When 0 or greater than 65 is set, data link will be executed within the range of connectable station numbers.
Switch 2	Not used	
Switch 3	Not used	
Switch 4	Not used	
Switch 5	Not used	

POINT
Do not set Switch 2 through 5. If any setting is made, normal operation may be affected.

(2) Operating procedures

Start settings on the I/O assignment setting screen of GX developer.

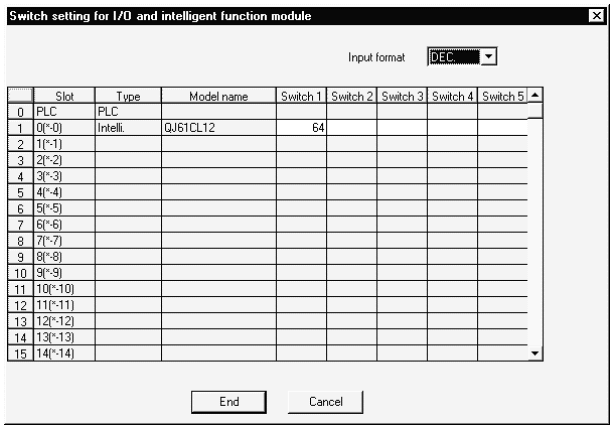


(a) I/O assignment setting screen

Set the following to the slot where QJ61CL12 is installed.

The “Type” setting is indispensable; set other items as needed.

Type	:Select "Intelli".
Model	:Enter the model name of the module.
Points	:Select the number of the I/O points occupied.
Start XY	:Enter the start I/O number of QJ61CL12.
Detailed setting	:Specify the control CPU of QJ61CL12. Because "Error time output mode" or "H/W error time PLC operation mode" are invalid for QJ61CL12, these settings are not required



(b) Intelligent function module switch settings screen

Click on [Switch setting] on the "I/O assignment settings" screen to display the screen shown left and make setting for Switch 1.

The setting can easily be made if the value is entered in decimal. Change the entry format to decimal notation.

4.5 Connecting Modules with Cables

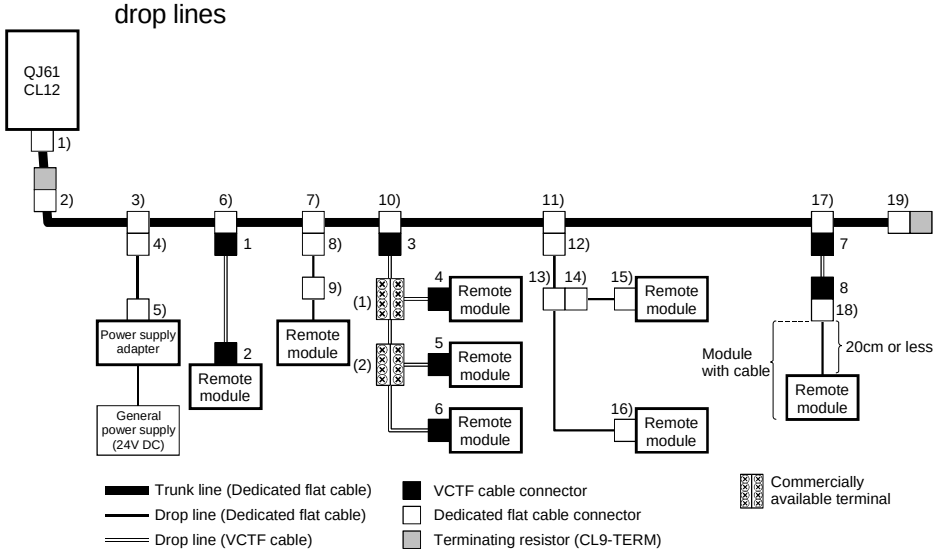
The connection method using the cables designed for CC-Link/LT is as follows:

(1) The cables can be connected regardless of the order of the station number.
(2) Be sure to set the QJ61CL12 at the end of the trunk line. The terminating resistor close to the QJ61CL12 should be connected within 20 cm from the QJ61CL12.
(3) Connect terminating resistors to the both ends of the trunk line of CC-Link/LT without fail.

POINT

Calculate the number of required connectors referring to the following example.

Example) When using a dedicated flat cable as a trunk line and VCTF cables as drop lines



The number of required connectors can be obtained as follows:

1) Dedicated flat cable connectors (No. of □): 19
2) VCTF cable connectors (No. of ■): 8
3) Terminal blocks (No. of ▩): 2
4) Terminating resistors (No. of ▭): 2

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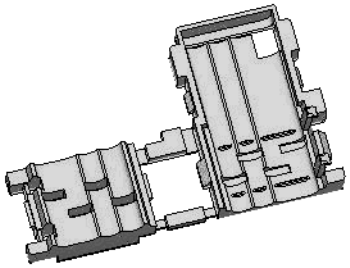
4.5.1 How to Connect Connector for Dedicated Flat Cable

How to connect the connector for the dedicated flat cable is shown in this section.

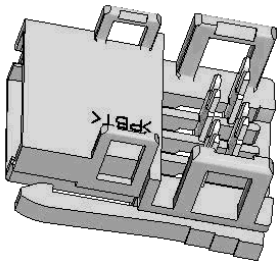
(1) Components

The components are as follows:

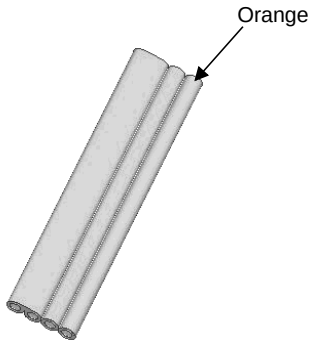
Component 1: Cover



Component 2: Body



Component 3: Dedicated flat cable



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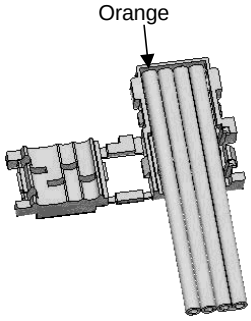
(1) Operating steps

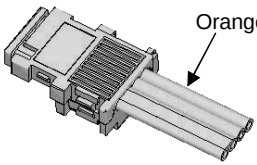
The operating steps are illustrated below.

(a) Processing Cable End

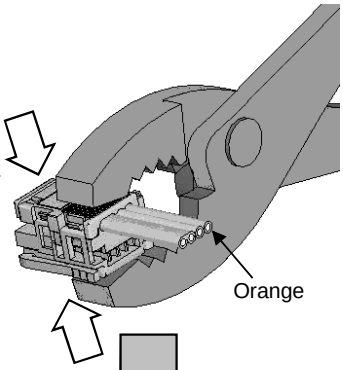
1) Properly place the dedicated flat cable in the cover. (Check that the position of the orange part is correct.)



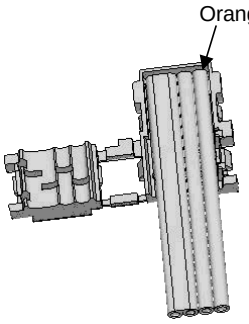
2) Close the cover so that the flat cable will be held between both sides of the cover.



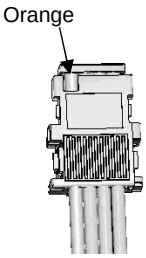
3) Assemble the cover with the body and press-fit them with pliers.



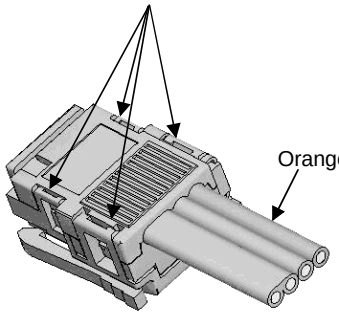
Note 1) This setting position is wrong.



Note 2) If the orange part is seen through the guide hole in the front cover, the wiring is not correct. Open the cover and perform the previous step again.

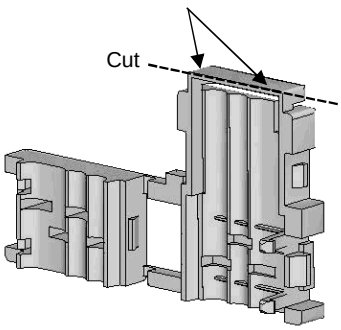


4) Check that all of four latches are engaged. Press-fitting is completed.

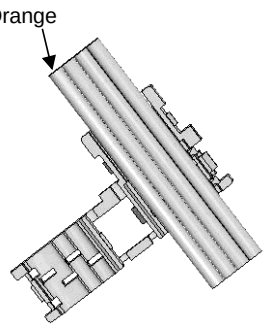


(b) T-Branch Processing

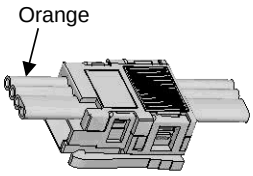
5) Cut 2 portions of the edge of the cover with nippers and remove the edge.



6) Set the cover at the point where T-branch is to be set.



7) Follow the instructions of steps 3 and 4 shown above to execute press-fitting.



4.5.2 How to Connect VCTF or High Flexible Cable Connector

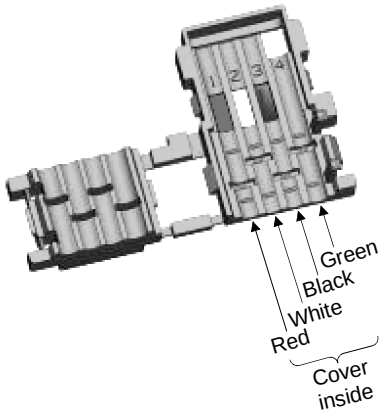
This section describes how to connect the VCTF cable connector or high flexible cable connector.

(1) Components

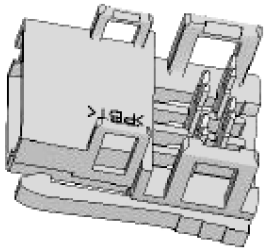
The components are shown below.

Component 1: Cover

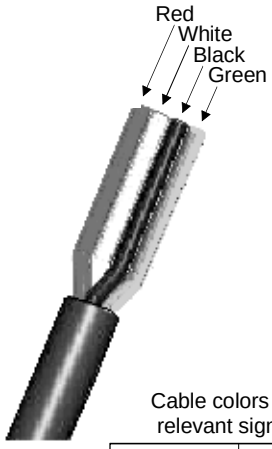
For VCTF cable connection: Green
For high flexible cable connection: Yellow green



Component 2: Body (Aqua)



Component 3:
VCTF cable/High flexible cable



Cable colors and relevant signals

Signal name	Cable color
+24V	Red
DA	White
DB	Black
24G	Green

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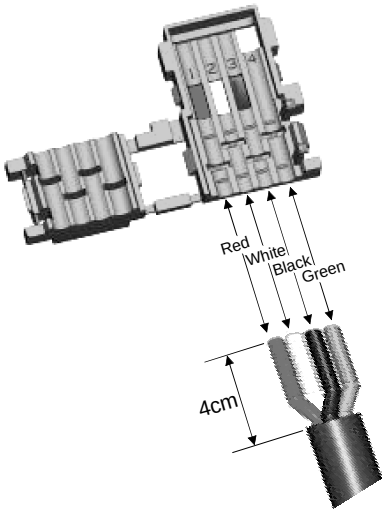
(1) Operating steps

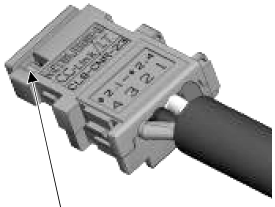
The operating steps are shown below.

(a) Processing Cable End

1) Place each wire of the VCTF cable or high flexible cable so that its wire color matches the color inside the cover.

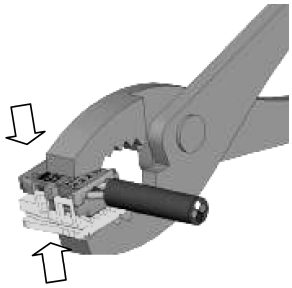


2) Close the cover so that the wires are properly fitted. When the wiring is correct, the green cable can be viewed through the hole. If a red, white or black cable is viewed through the hole, open the cover and correct the wiring. Incorrect wiring may cause failure of the module.

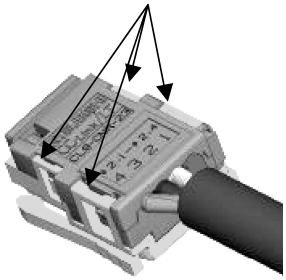


Green: Correct wiring
Red, white or black: Incorrect wiring

3) Assemble the cover with the body and press-fit them with pliers.



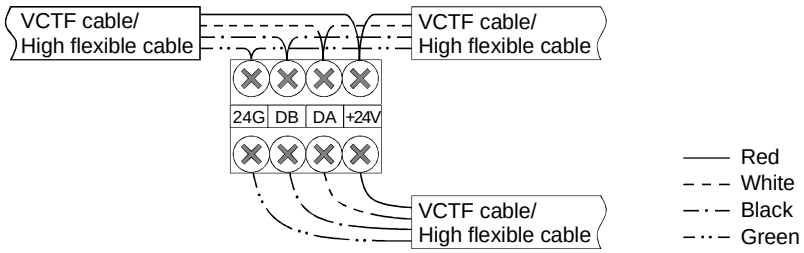
4) Verify that 4 latches are engaged. Press-fitting is complete.



(b) T-Branch Processing (VCTF cable/High flexible cable)

5)-1 When using a terminal block for T-branching

When connecting VCTF cables or high flexible cables to the terminal block, cable colors must be matched for each terminal.



Note) When connecting a dedicated flat cable to the terminal block (e.g. in a case where a VCTF cable is used for the trunk line and dedicated flat cables for drop lines), each of "+24V", "DA", "DB" and "24G" printed on the dedicated flat cable must match the color of the VCTF or high flexible cable as shown in the right table.

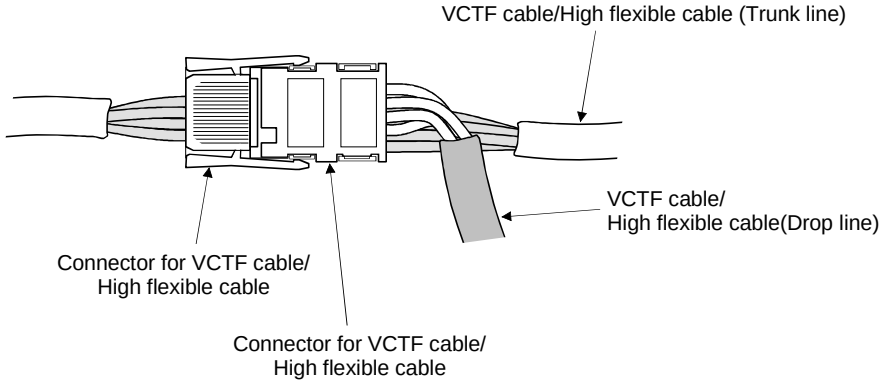
Split the dedicated flat cable into discrete "+24V", "DA", "DB" and "24G" cables.

Dedicated flat cable	VCTF cable/High flexible cable
+24V	Red
DA	White
DB	Black
24G	Green

4 - 12

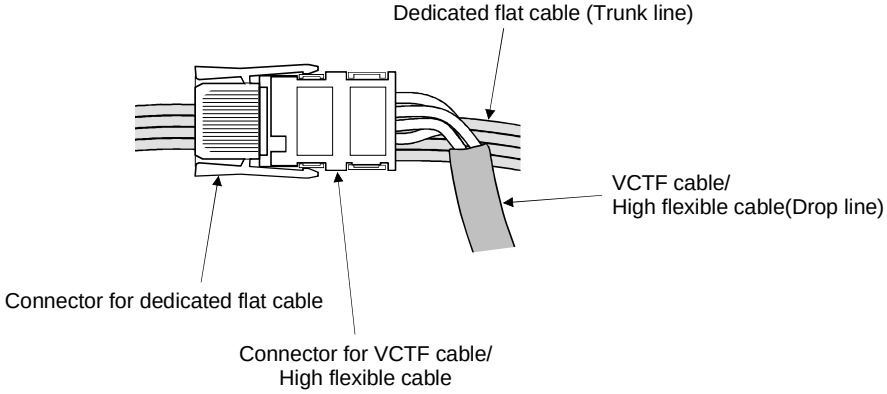
5)-2 When using a connector for T-branching

After removing the sheath 7cm or more, make a T-branch wiring with a connector in the same way as the T-branch method for the dedicated flat cable.



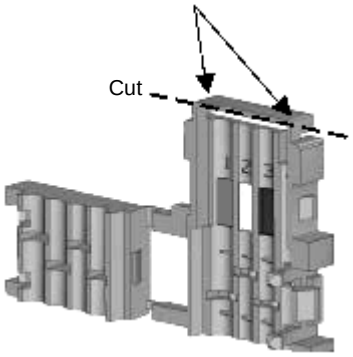
(c) T-Branching procedure (Trunk line: Dedicated flat cable, Drop line: VCTF cable/High flexible cable)

6) Make a T-branch wiring with the connector in the same way as the T-branch method for the dedicated flat cable.

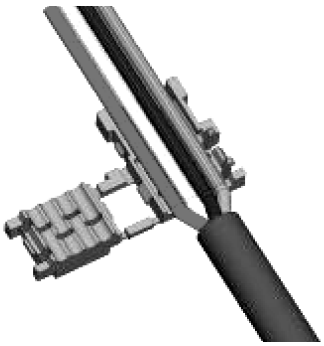


(d) Processing procedure for VCTF cable/High flexible cable connector (Connecting terminating resistor)

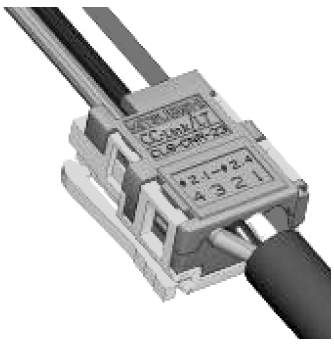
7) Cut off the 2 portions of the covers edge with nippers and remove the edge.



8) Place the cover at the point where the terminating resistor is to be connected.



9) Follow the step (a) 3) and 4) and execute press-fitting.



(3) Precautions for use of high flexible cables

Prevent too much stress from being applied to the connector part when the cable moves.

4.5.3 Mixture of Different Kinds of Cables

This section describes mixture of different kinds of cables.

(1) Trunk line

Mixture of different kinds of cables is not allowed.

(2) Drop line

(a) Mixture of different kinds of cables is allowed.

(b) Using more than one kind of cables for the same drop line is not allowed. (See Fig. 4.1.)
When using a module with cable (e.g. CL1Y2-T1D2S), however, dissimilar cables can be connected if the dedicated flat cable of the module is 20cm long or less. (See Fig. 4.2.)

[Example]

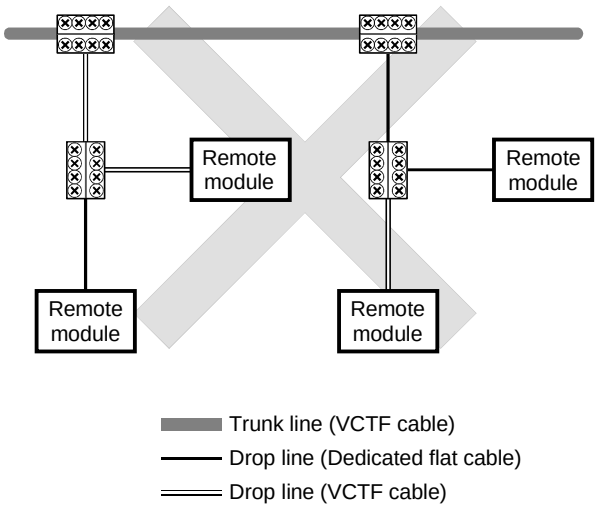


Fig. 4.1

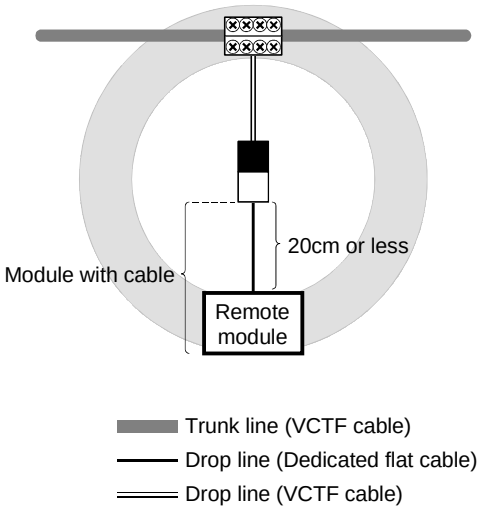
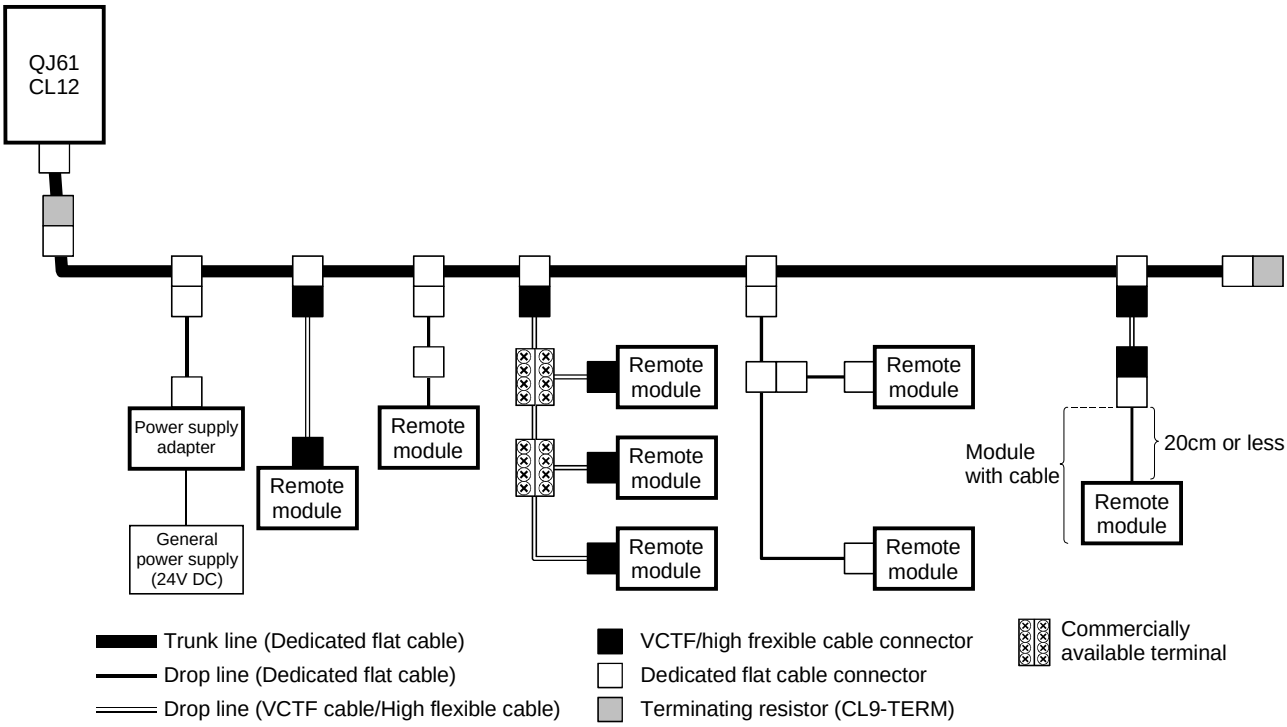
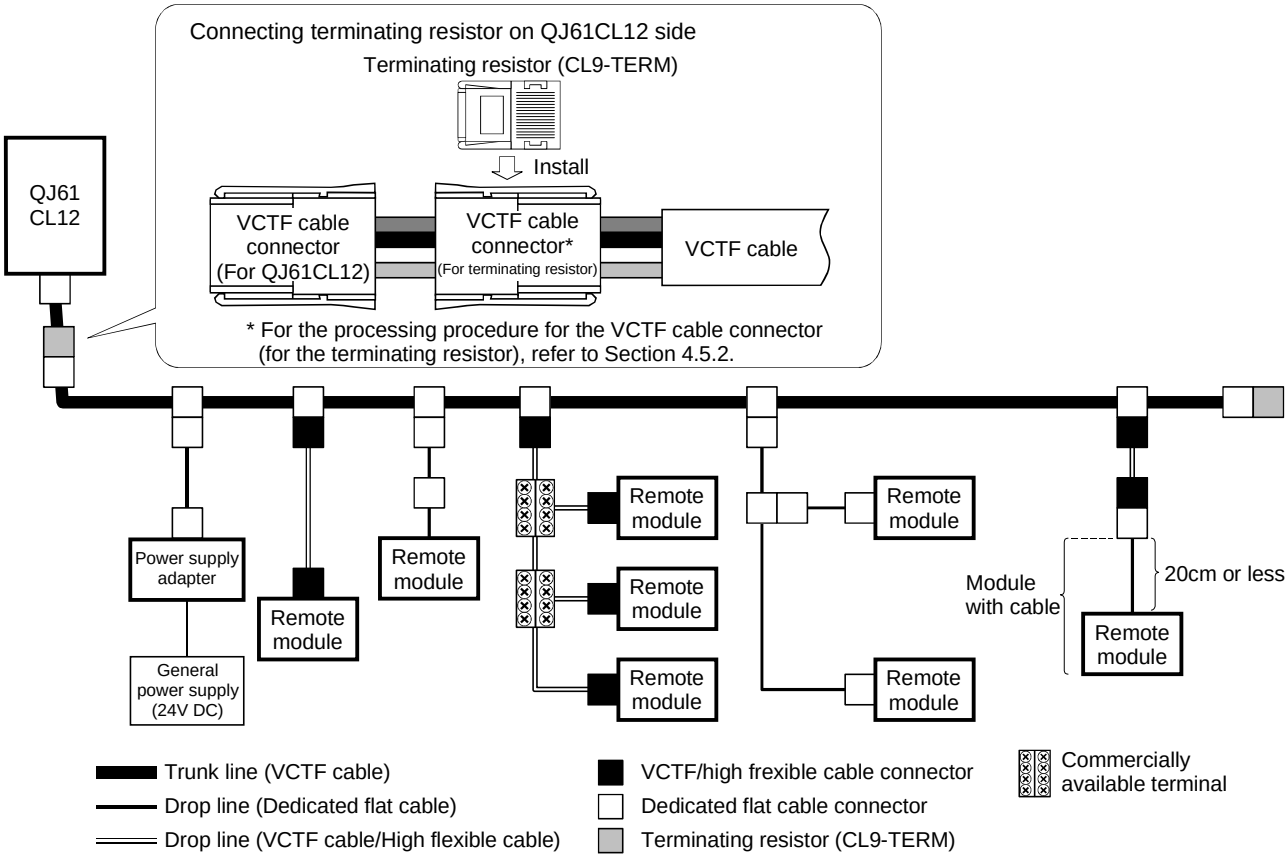


Fig. 4.2

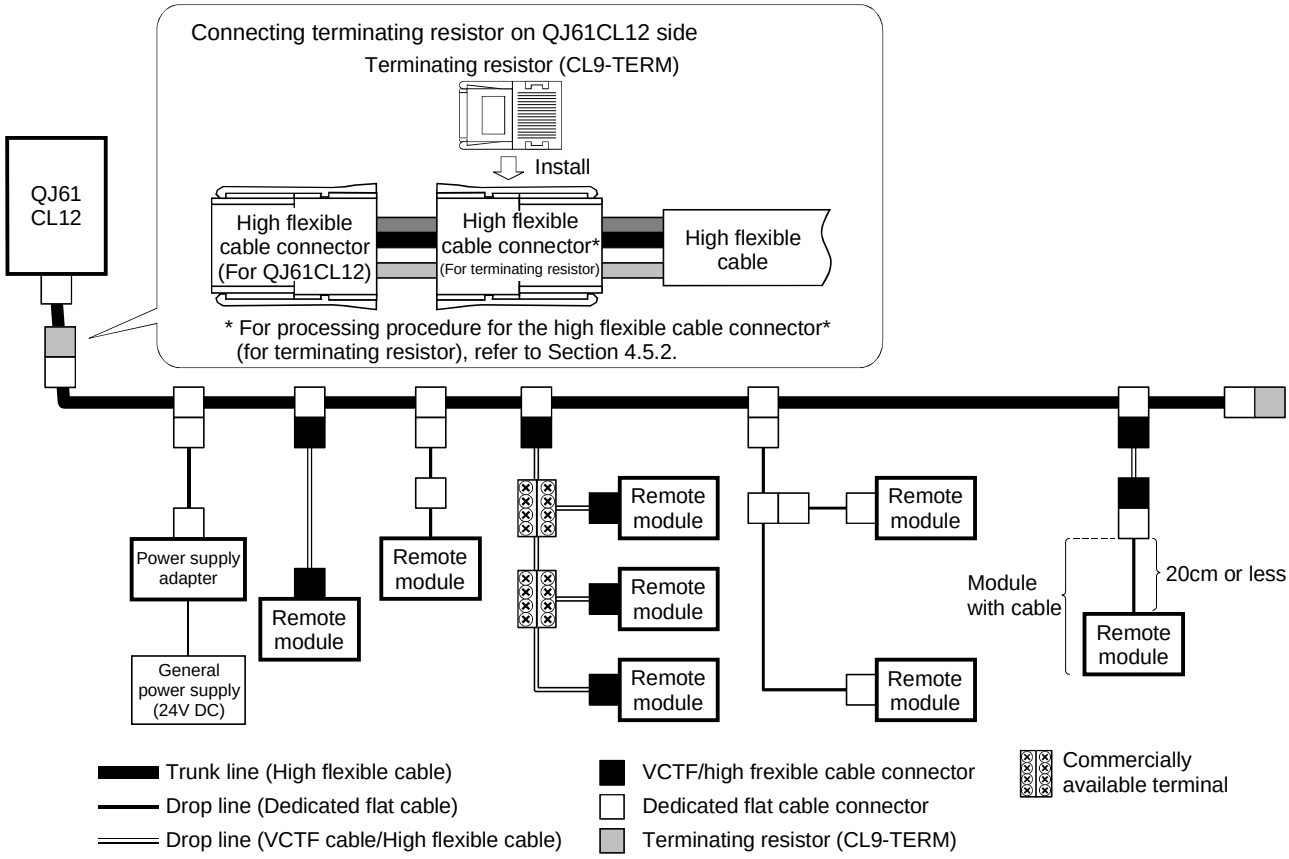
(3) System configuration example for using dedicated flat cable as trunk line



(4) System configuration example for using VCTF cable as trunk line


Connecting terminating resistor on QJ61CL12 side
Terminating resistor (CL9-TERM)
Install
QJ61
CL12
VCTF cable connector (For QJ61CL12)
VCTF cable connector* (For terminating resistor)
VCTF cable
* For the processing procedure for the VCTF cable connector (for the terminating resistor), refer to Section 4.5.2.
Power supply adapter
General power supply (24V DC)
Remote module
Module with cable
20cm or less
Trunk line (VCTF cable)
Drop line (Dedicated flat cable)
Drop line (VCTF cable/High flexible cable)
VCTF/high frexible cable connector
Dedicated flat cable connector
Terminating resistor (CL9-TERM)
Commercially available terminal

(5) System configuration example for using high flexible cable as trunk line



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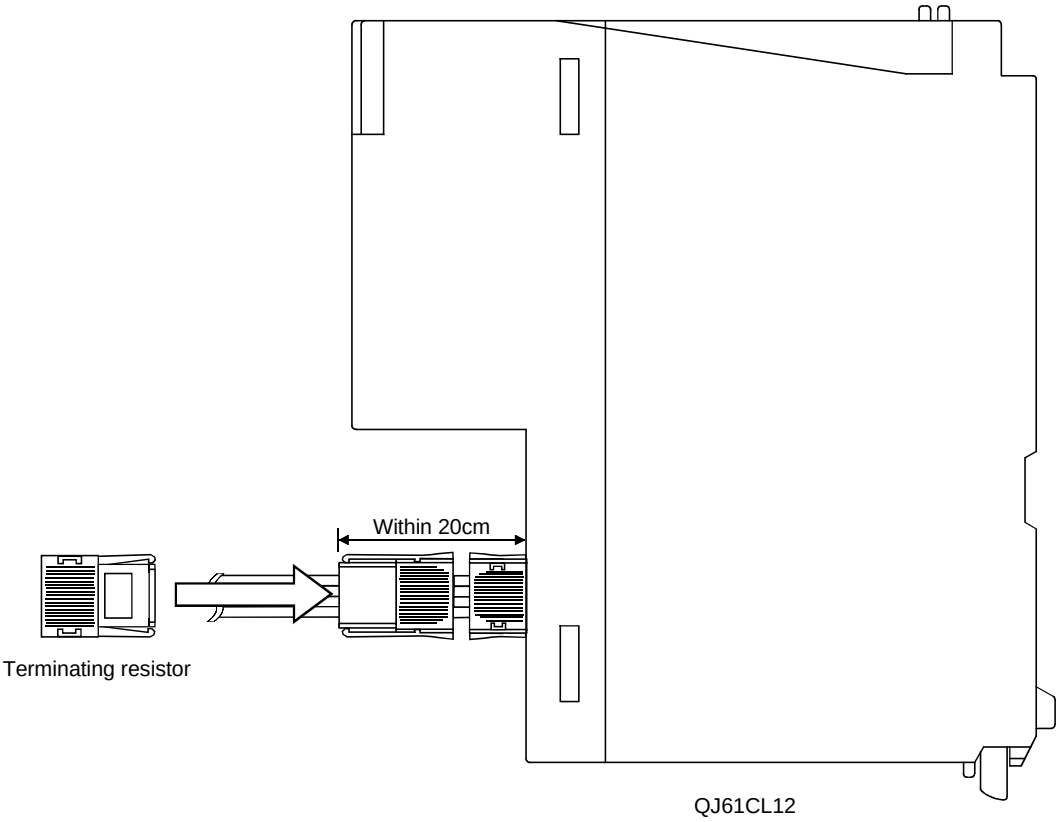
4.5.4 Installing Terminating Resistors

Use the CL9-TERM (Gray) for the terminating resistor.
For the system configuration using the dedicated flat cables only, the CL9-RYVK (Black) can be also used. Note that the same type must be used for both ends of the trunk line.

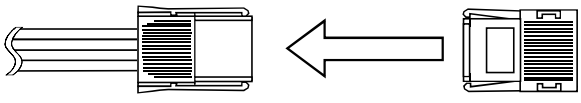
(1) Installing terminating resistor to QJ61CL12 side

Install the terminating resistor to the QJ61CL12 side as shown below.
Note that it should be placed within 20 cm from the QJ61CL12.



(2) Installing terminating resistor to another end of trunk line

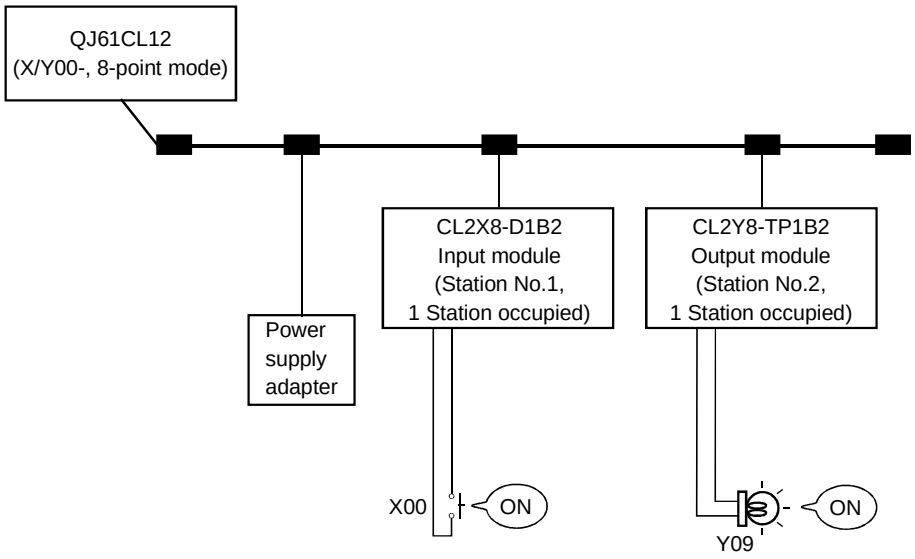
Install the terminating resistor to the opposite end to the QJ61CL12 side as shown below.



4.5.5 Check of Wiring

Check the wiring among remote stations and external devices.

[Example]
In the case that I/O start No. of the QJ61CL12 is X/Y00 and the point mode setting is set to 8-point mode:



(a) Checking connection between input module and external device

1) Turn on the switch of the external device connected to the input module (Station No.1), which corresponds to "X0".
2) Using GX Developer, activate [Online] – [Monitor] – [Device batch], set "X00" to [Device] and click on [Start monitor].
3) If "X00" is ON, it means that the input module and the external device are normally linked.

(b) Checking connection between output module and external device

1) Using GX Developer, activate [Online] – [Debug] – [Device test], set "Y09" to [Device] of [Bit Device] and click on [FORCE ON].
2) If the output module and the external device are correctly linked, the lamp corresponding to "Y09" will light up.

4.6 Installing/Removing Remote Station

The remote station of the CC-Link/LT cannot be installed or removed while the PLC CPU is running. When installing or removing, ensure either of the following states.

1) Power of the entire system is OFF.
2) The PLC CPU is in the STOP status. (The RUN/STOP switch of the PLC CPU is set in the STOP position.)

POINT

(1) Installing or removing a remote station with the PLC CPU running may cause system failure or faulty input/output.

(2) When a remote station has been installed while the PLC CPU is stopped, whether the remote station is executing data link or not is checked by the following methods.
- Use the CC-Link/LT diagnosis.
- See the information of remote station connection (Buffer memory address: 0-3: Un\G0-3) and check if the corresponding bit of the station is ON or not.
- Check if the "PW" and "L RUN" LEDs of the remote station light up or not.

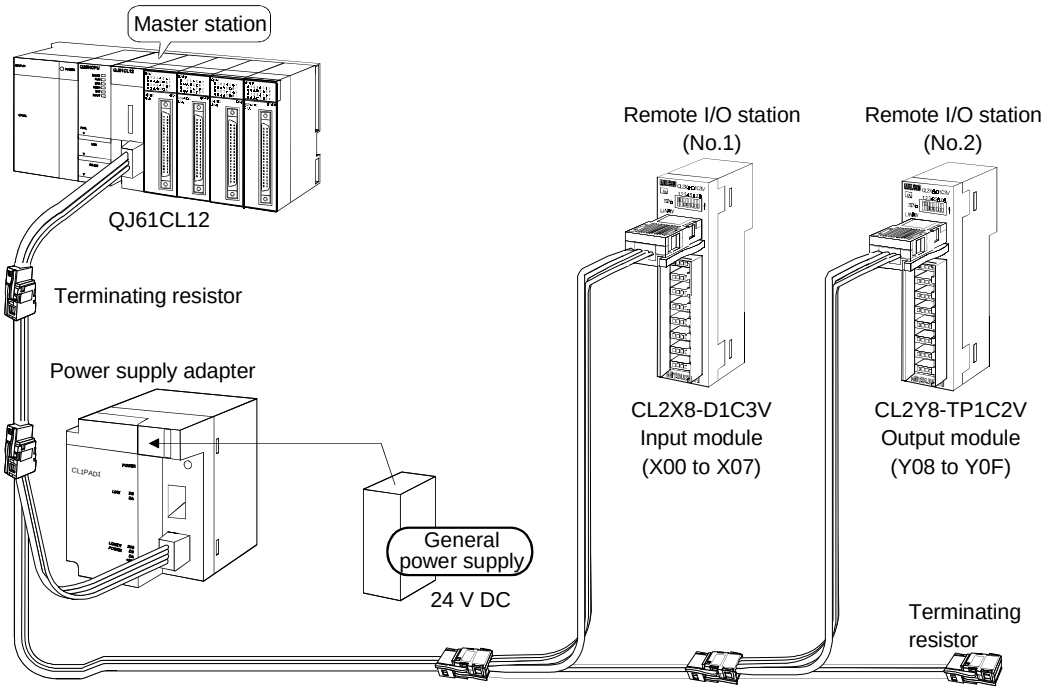
5 PROGRAMMING

This section describes the programming of the QJ61CL12.
When applying any of the program examples introduced in this chapter to the actual system, verify the applicability and confirm that no problems will occur in the system control.

5.1 System Configuration

The system where 2 remote I/O stations are connected is used as an example in this section.

I/O occupied points setting : 32 points
Transmission rate setting : 2.5 Mbps
Point mode : 8-point mode



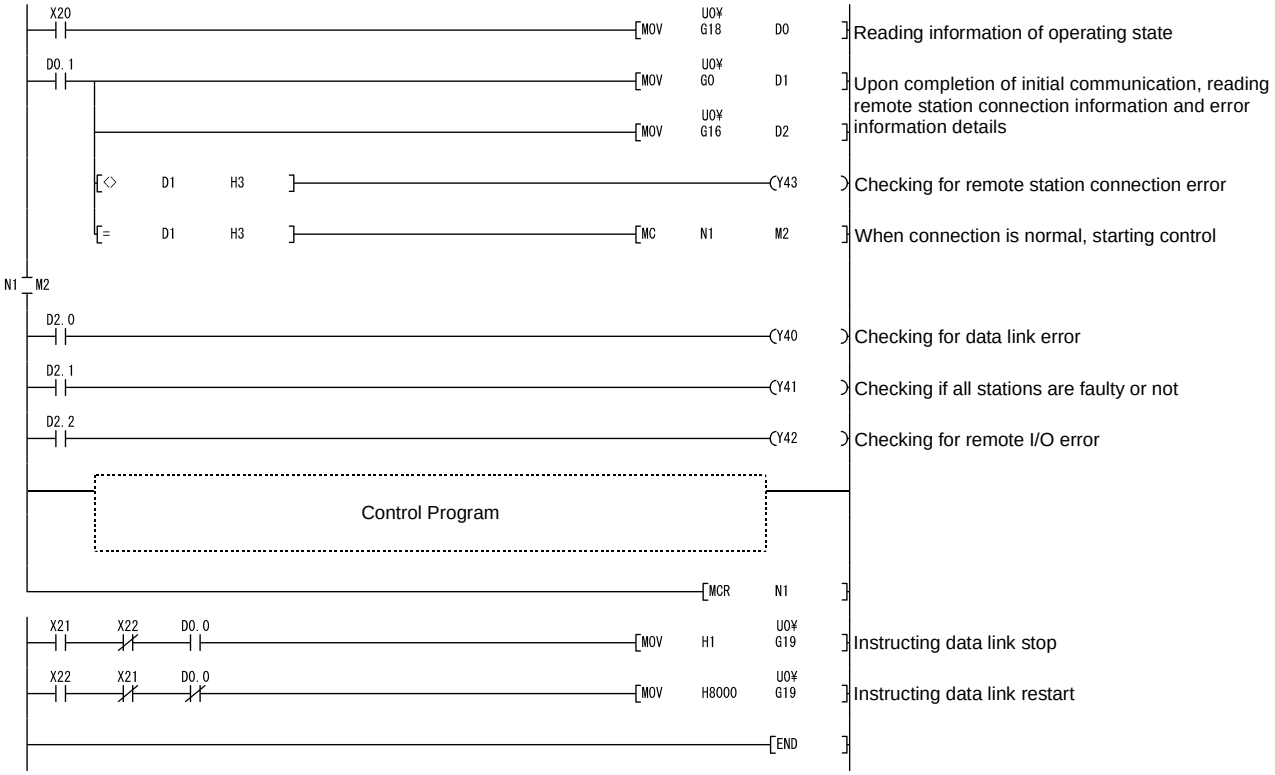
5.2 Devices Available for Users

The following are the devices that users can use.

- CC-Link/LT control start signal X20
- Data link stop instruction signal X21
- Data link restart instruction signal X22
- Data link error check signal Y40
- All stations' failure check signal Y41
- Remote I/O error check signal Y42
- Remote station incorrect connection signal Y43
- Control start flag M2
- Data register for reading information of operating state D0
- Data register for reading remote station connection information D1
- Data register for reading error information details D2

5.3 Program Example

A program example is shown below.



6 TROUBLESHOOTING

This section describes the troubleshooting of the CC-Link/LT.

6.1 Condition of Each Station in Case of Failure

When a failure occurs in the system, conditions of each station will be as shown in Table 6.1.

Table 6.1 Condition of Each Station in Case of Failure

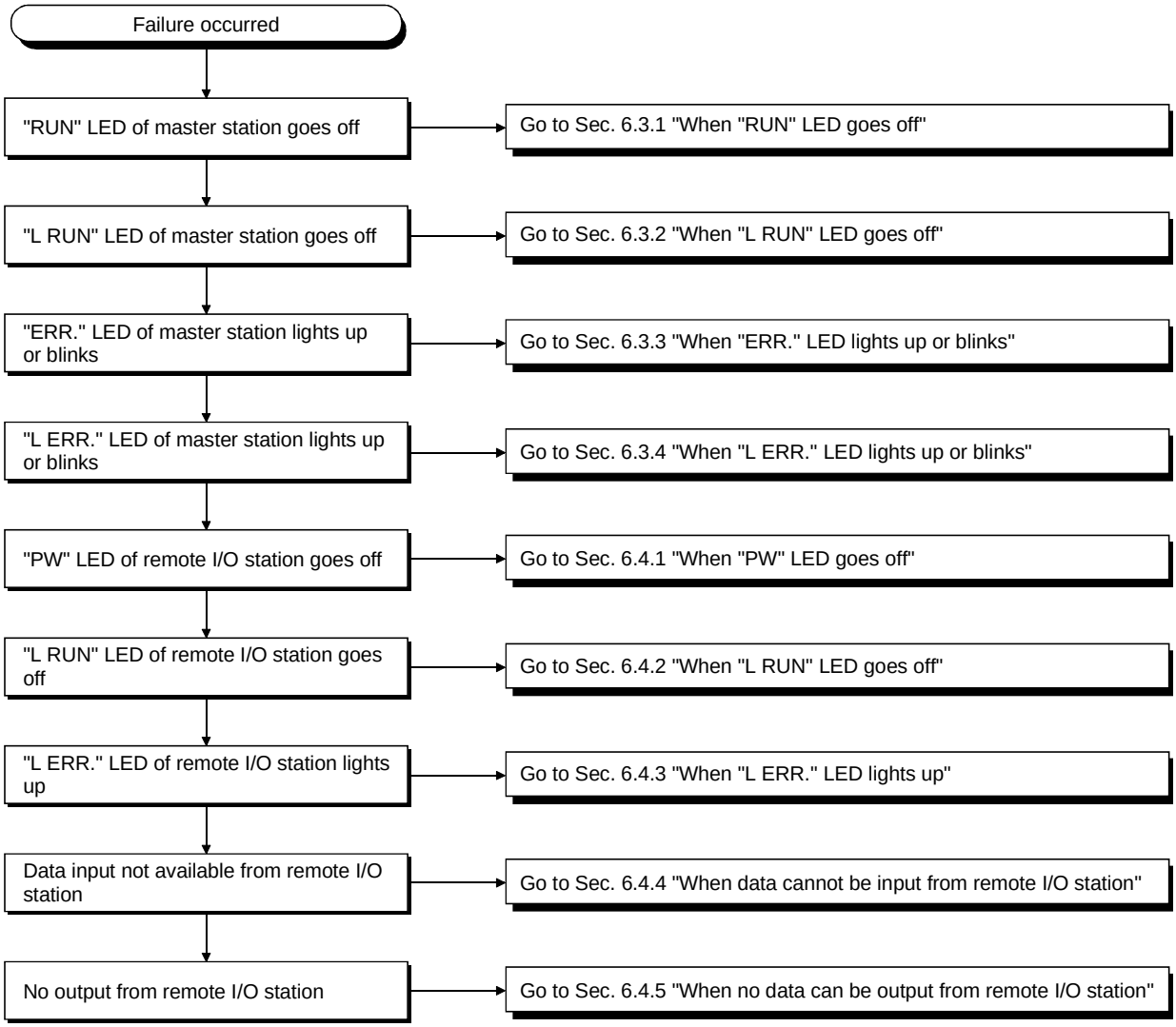
Data link status	Master station		Remote station	
	Remote input	Remote output	Input	Output
When PLC CPU of master station is faulty and stopped (Data link stopped)	Maintained	Maintained	Continued *1	Maintained/OFF *2
When remote station is faulty (e.g. Data link error) (Data link continued)	Input from faulty remote station is cleared	Continued	Continued *1	Maintained/OFF *2
When remote station is de-energized (Data link continued)	Input from de-energized remote station is cleared	Continued	Depends on external signals	All OFF

*1 Although external data will be input (Input LED indicator lit), data cannot be sent to the master station.
*2 The condition is different depending on the output hold setting of the remote station.

6 - 1

6.2 Troubleshooting Flow

The following indicates the error symptoms. Refer to the corresponding section for details.


Failure occurred
"RUN" LED of master station goes off
Go to Sec. 6.3.1 "When "RUN" LED goes off"
"L RUN" LED of master station goes off
Go to Sec. 6.3.2 "When "L RUN" LED goes off"
"ERR." LED of master station lights up or blinks
Go to Sec. 6.3.3 "When "ERR." LED lights up or blinks"
"L ERR." LED of master station lights up or blinks
Go to Sec. 6.3.4 "When "L ERR." LED lights up or blinks"
"PW" LED of remote I/O station goes off
Go to Sec. 6.4.1 "When "PW" LED goes off"
"L RUN" LED of remote I/O station goes off
Go to Sec. 6.4.2 "When "L RUN" LED goes off"
"L ERR." LED of remote I/O station lights up
Go to Sec. 6.4.3 "When "L ERR." LED lights up"
Data input not available from remote I/O station
Go to Sec. 6.4.4 "When data cannot be input from remote I/O station"
No output from remote I/O station
Go to Sec. 6.4.5 "When no data can be output from remote I/O station"

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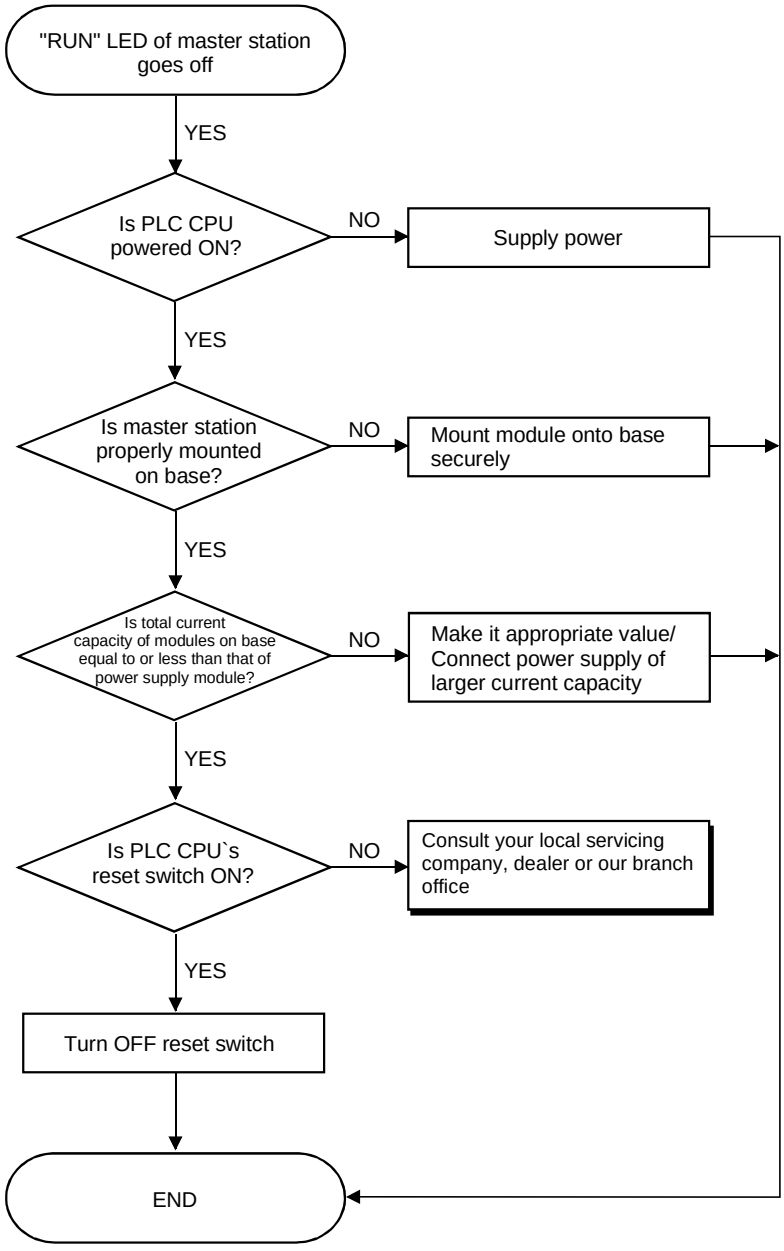
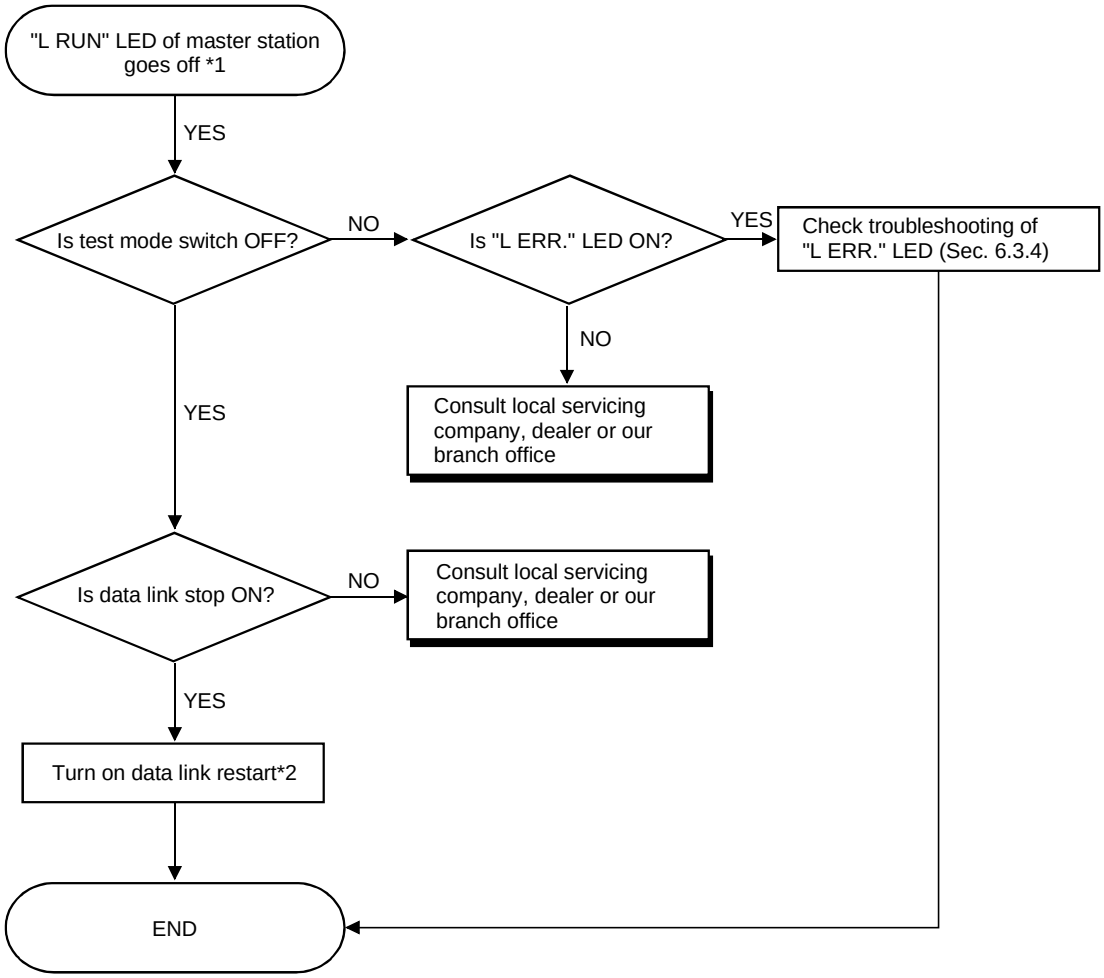
6.3 Troubleshooting of Master Station

The troubleshooting procedures for the master station are shown according to the LED status.

6.3.1 When "RUN" LED Goes Off


"RUN" LED of master station goes off
YES
Is PLC CPU powered ON?
NO
Supply power
YES
Is master station properly mounted on base?
NO
Mount module onto base securely
YES
Is total current capacity of modules on base equal to or less than that of power supply module?
NO
Make it appropriate value/ Connect power supply of larger current capacity
YES
Is PLC CPU`s reset switch ON?
NO
Consult your local servicing company, dealer or our branch office
YES
Turn OFF reset switch
END

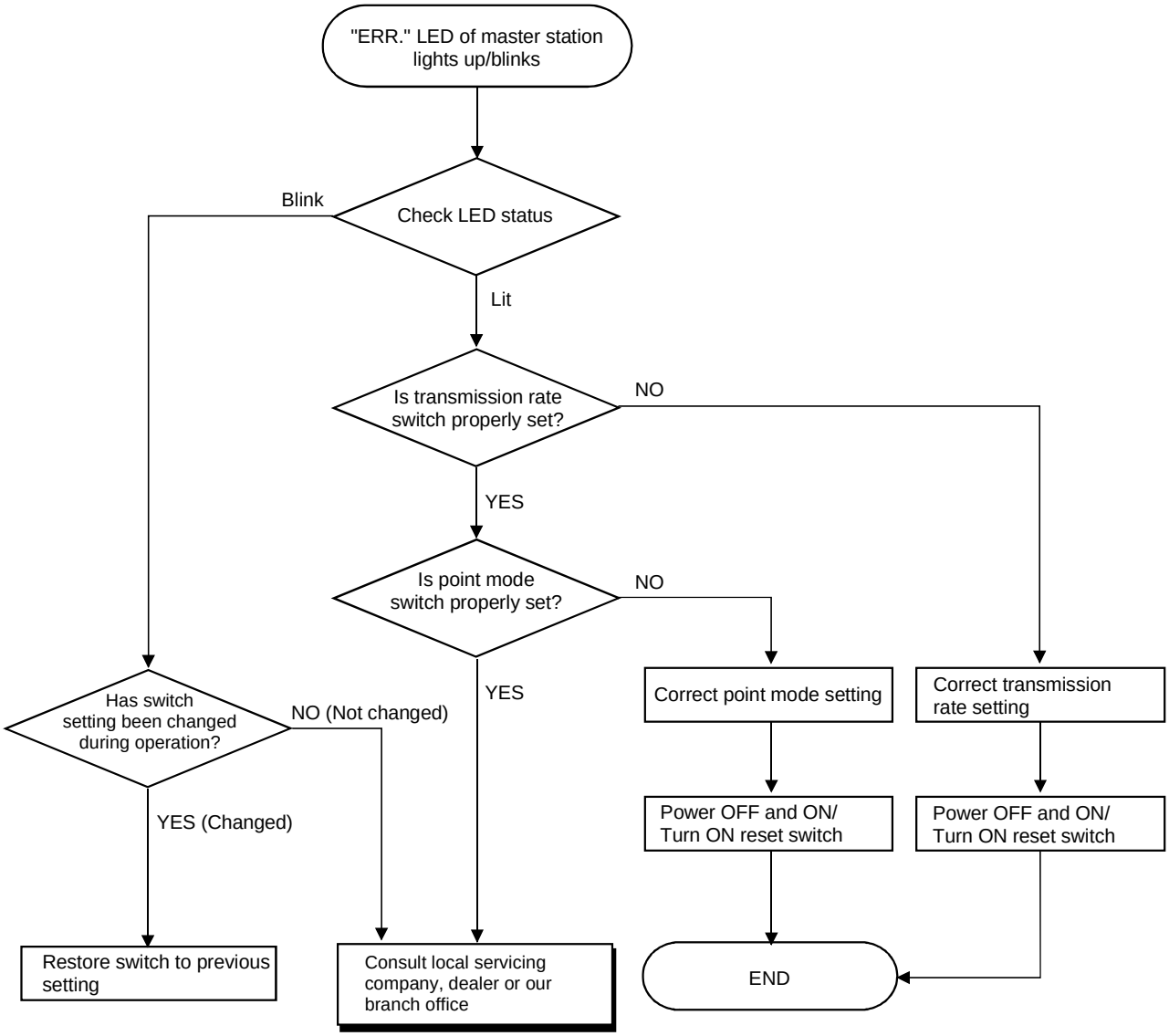
6.3.2 When "L RUN" LED Goes OFF



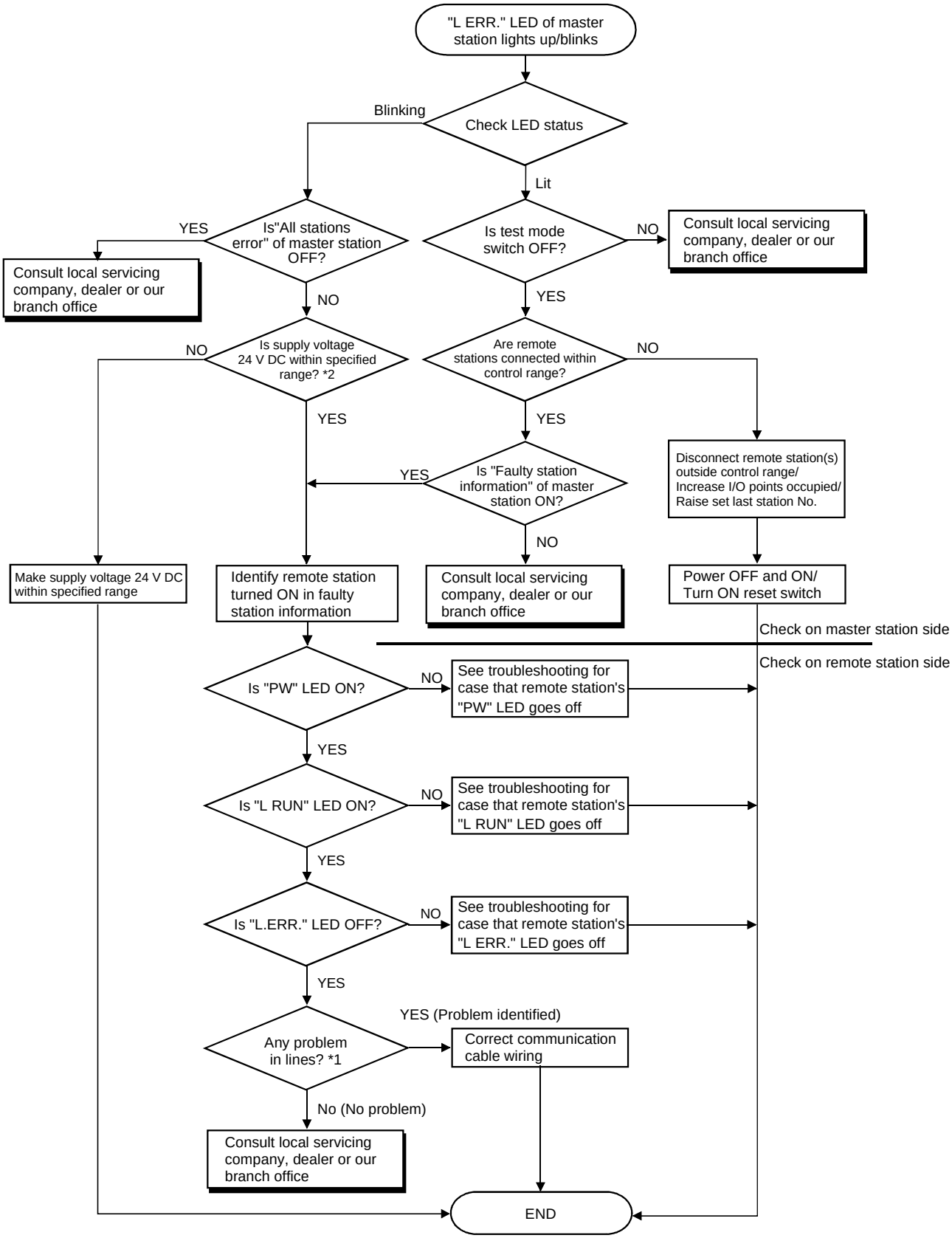
*1: "L RUN" LED will not light up immediately after the CPU reset is cancelled.

*2: When restart and stop of data link is simultaneously turned ON, the data link stop precedes another.

6.3.3 When "ERR." LED Lights Up or Blinks

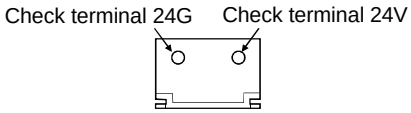

"ERR." LED of master station lights up/blinks
Check LED status
Blink
Lit
Is transmission rate switch properly set?
NO
YES
Is point mode switch properly set?
NO
YES
Has switch setting been changed during operation?
NO (Not changed)
YES (Changed)
Correct point mode setting
Correct transmission rate setting
Power OFF and ON/ Turn ON reset switch
Power OFF and ON/ Turn ON reset switch
Restore switch to previous setting
Consult local servicing company, dealer or our branch office
END

6.3.4 When "L ERR." LED Lights Up or Blinks


"L ERR." LED of master station lights up/blinks
Check LED status
Blinking
Lit
Is"All stations error" of master station OFF?
YES
Consult local servicing company, dealer or our branch office
NO
Is test mode switch OFF?
NO
Consult local servicing company, dealer or our branch office
YES
Is supply voltage 24 V DC within specified range? *2
NO
Make supply voltage 24 V DC within specified range
YES
Are remote stations connected within control range?
NO
Disconnect remote station(s) outside control range/ Increase I/O points occupied/ Raise set last station No.
Power OFF and ON/ Turn ON reset switch
YES
Is "Faulty station information" of master station ON?
YES
NO
Identify remote station turned ON in faulty station information
Consult local servicing company, dealer or our branch office
Check on master station side
Check on remote station side
Is "PW" LED ON?
NO
See troubleshooting for case that remote station's "PW" LED goes off
YES
Is "L RUN" LED ON?
NO
See troubleshooting for case that remote station's "L RUN" LED goes off
YES
Is "L.ERR." LED OFF?
NO
See troubleshooting for case that remote station's "L ERR." LED goes off
YES
Any problem in lines? *1
YES (Problem identified)
Correct communication cable wiring
No (No problem)
Consult local servicing company, dealer or our branch office
END

*1: Check for short circuit, inverse connection, cable break, excessive pressure to a cable, terminating resistor, overall extended length, drop line length (overall length, longest drop length) and peripheral environment (such as noise).

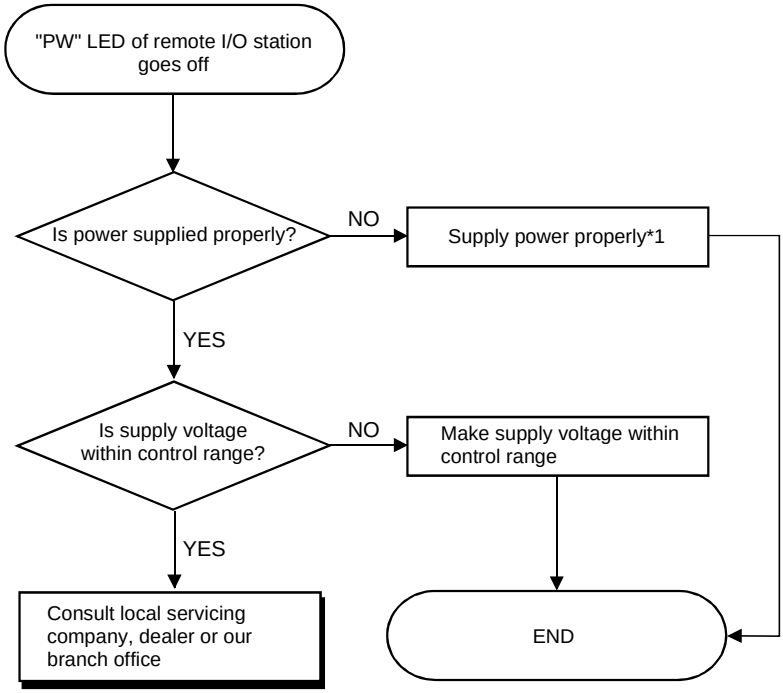
*2: Measure the voltage using the check terminals of the terminating resistors.



6.4 Troubleshooting of Remote I/O Station(s)

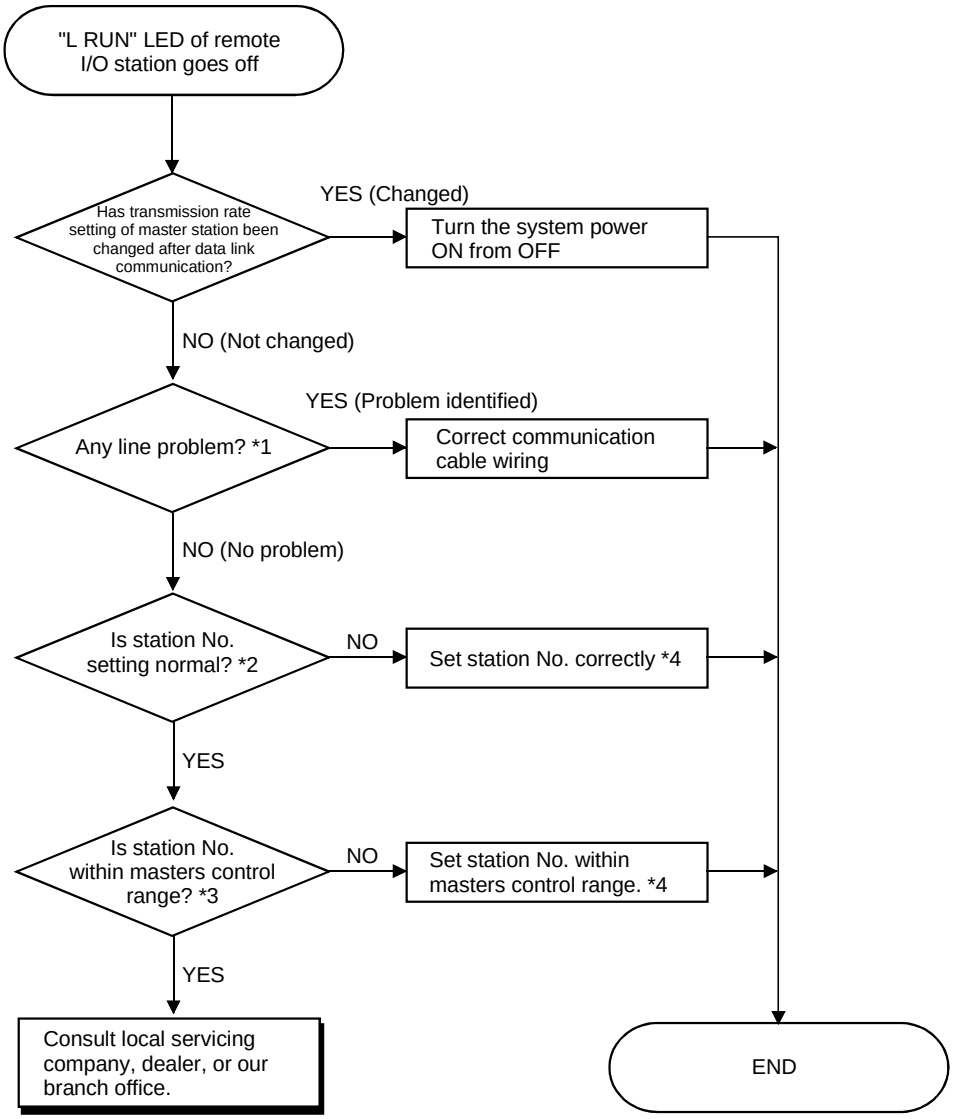
The troubleshooting procedures for the remote I/O stations are shown according to the LED status.
For troubleshooting of the remote device station, refer to the user's manual for your remote device station.

6.4.1 When "PW" LED Goes Off



*1: Check for short circuit, inverse connection, cable break or excessive pressure to a cable.

6.4.2 When "L RUN" LED Goes Off


"L RUN" LED of remote I/O station goes off
Has transmission rate setting of master station been changed after data link communication?
YES (Changed)
Turn the system power ON from OFF
NO (Not changed)
Any line problem? *1
YES (Problem identified)
Correct communication cable wiring
NO (No problem)
Is station No. setting normal? *2
NO
Set station No. correctly *4
YES
Is station No. within masters control range? *3
NO
Set station No. within masters control range. *4
YES
Consult local servicing company, dealer, or our branch office.
END

*1: Check for short circuit, inverse connection, cable break, excessive pressure to a cable, terminating resistor, overall extended length, drop line length (overall length, longest drop length) and peripheral environment (such as noise).

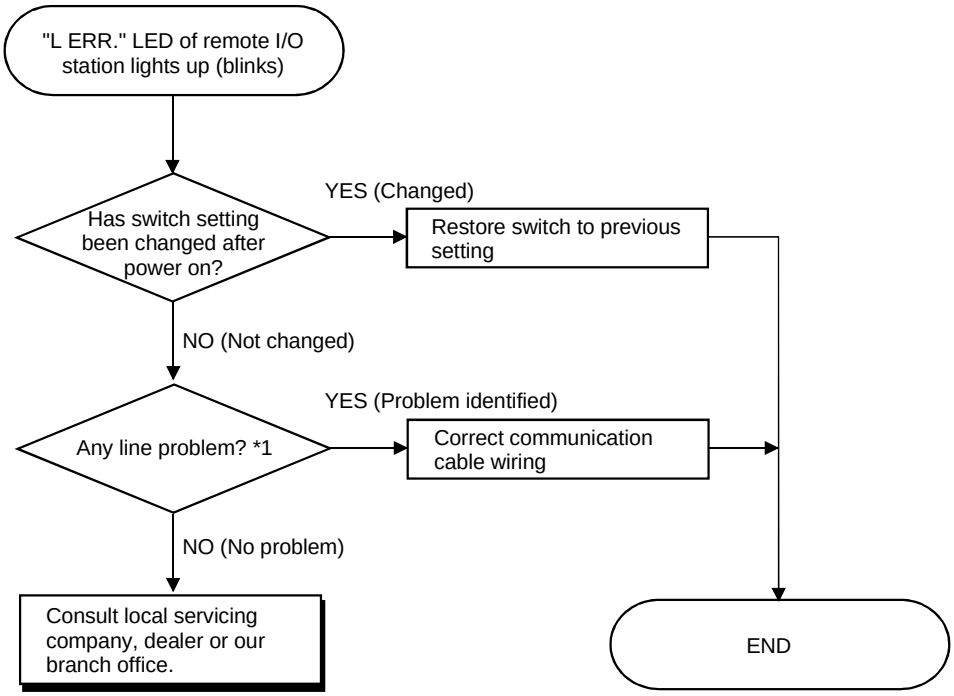
*2: Pay attention to the following.

- The station number should be neither 0 nor more than 64.
- The number of units should be 0 to 9.
- It should not be mistaken for the output hold setting switch or the response speed setting switch.

*3: Check that each number of all stations occupied by the module is 64 or less, and they are within the control range of the master station. (See Sec. 3.4.2, 3.5.)

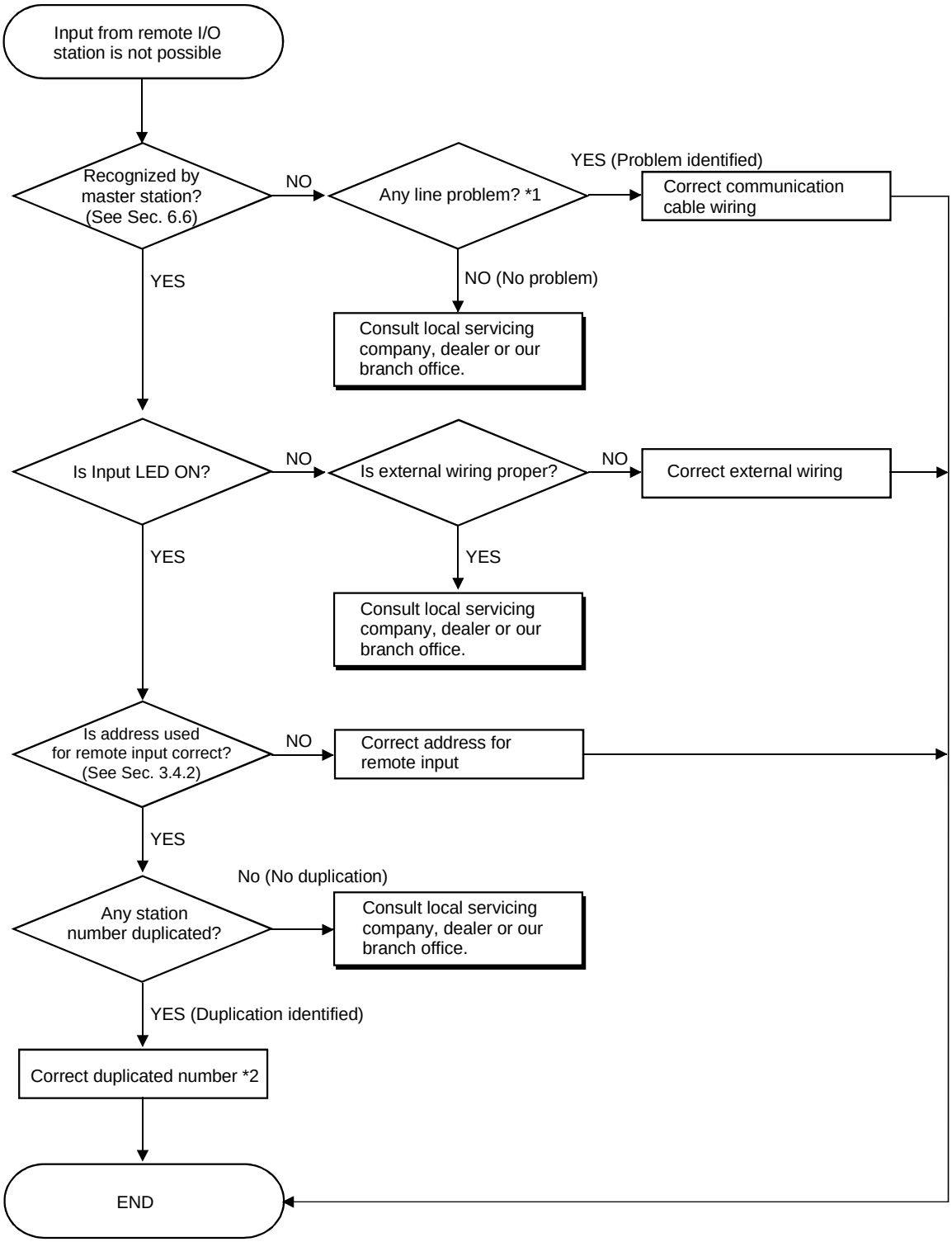
*4: If the station number setting of a remote I/O station has been changed, turn the power of the entire system OFF and then ON.

6.4.3 When "L ERR." LED Lights Up


"L ERR." LED of remote I/O station lights up (blinks)
Has switch setting been changed after power on?
YES (Changed)
Restore switch to previous setting
NO (Not changed)
Any line problem? *1
YES (Problem identified)
Correct communication cable wiring
NO (No problem)
Consult local servicing company, dealer or our branch office.
END

*1: Check for short circuit, inverse connection, cable break, excessive pressure to a cable, terminating resistor, overall extended length, drop line length (overall length, longest drop length) and peripheral environment (such as noise).

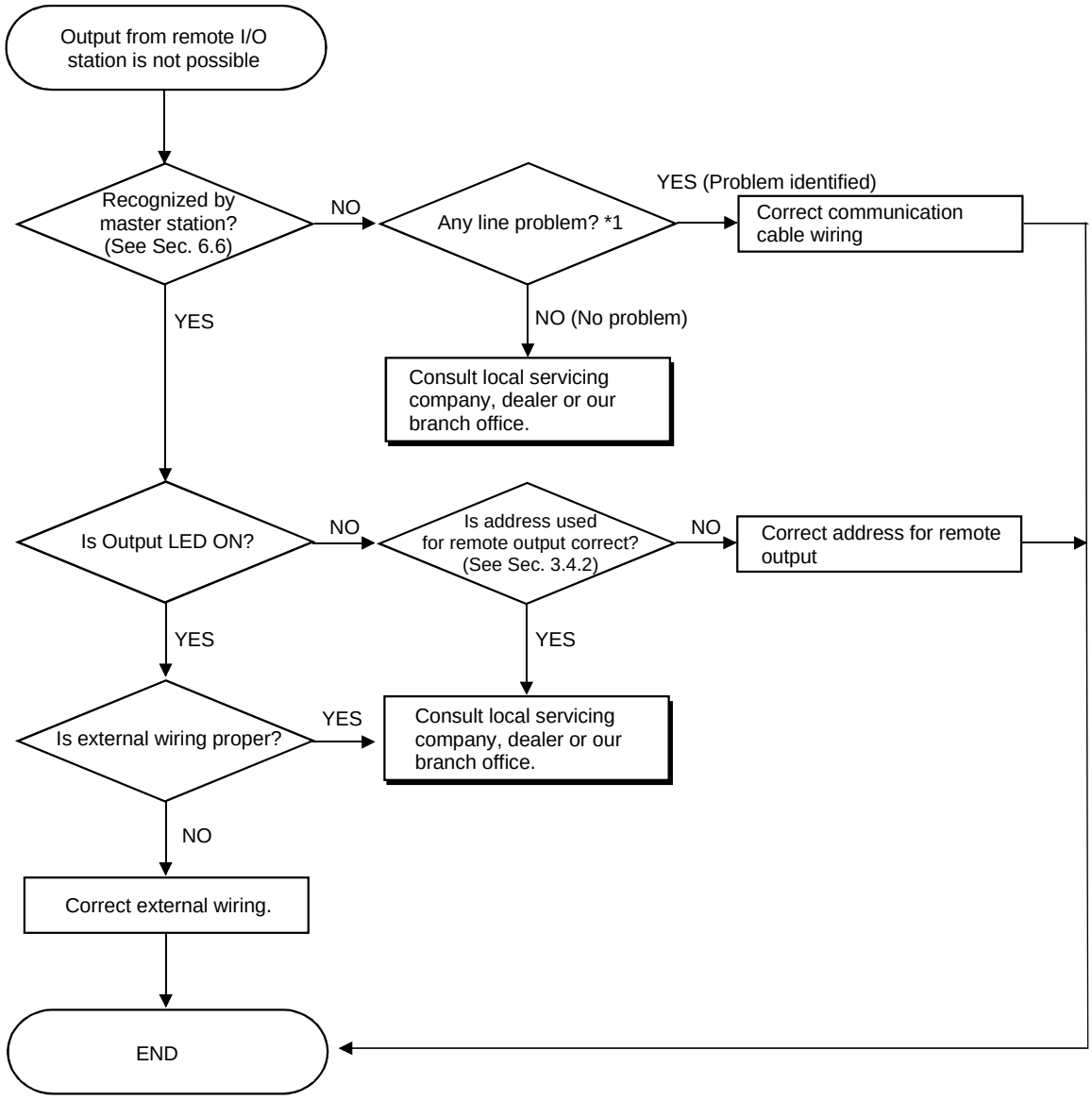
6.4.4 When Input From Remote I/O Station Is Not Possible



*1: Check for short circuit, inverse connection, cable break, excessive pressure to a cable, terminating resistor, overall extended length, drop line length (overall length, longest drop length) and peripheral environment (such as noise).

*2: When the station number setting of a remote I/O station has been changed, turn the power of the entire system OFF and then ON.

6.4.5 When Output From Remote I/O Station Is Not Possible



*1: Check for short circuit, inverse connection, cable break, excessive pressure to a cable, terminating resistor, overall extended length, drop line length (overall length, longest drop length) and peripheral environment (such as noise).

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6.5 Error Codes

When errors are detected by the QJ61CL12, the error data are stored in the area for the detailed error information (Buffer memory address 16: Un\G16).
For error details, refer to Section 3.3.2 (4).

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6.6 CC-Link/LT Diagnostics Using GX Developer

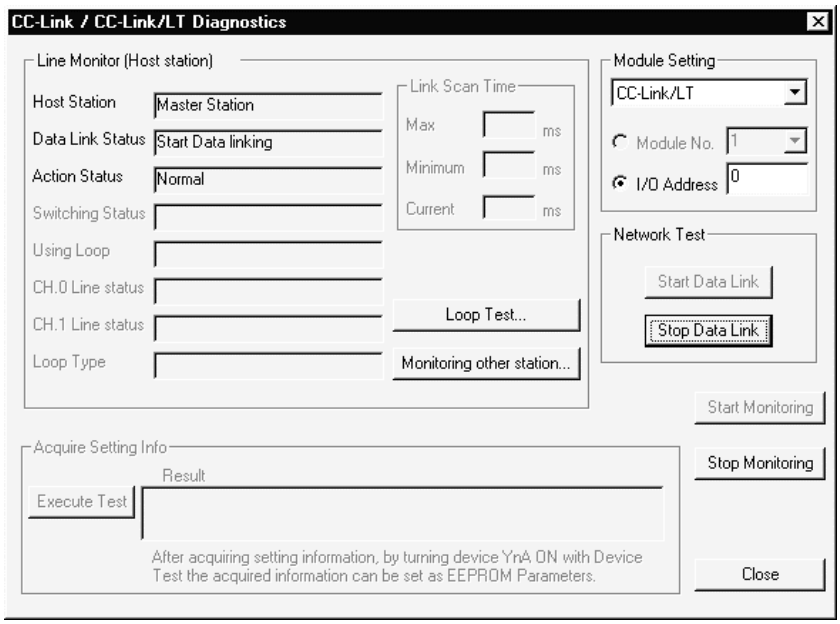
After connecting all modules with connection cables, you can check the condition of each module with this diagnosis to see if data link is available or not.
This function is also available when the QJ61CL12 is installed to a remote I/O station of MELSECNET/H.

(1) Line Monitor [Host station]

Data link status of the host station (the station connected to peripheral devices) is monitored.

(a) Operation steps

"Diagnostics" → "CC-Link / CC-Link/LT Diagnostics"
Select "CC-Link/LT" in "Module Setting", specify the start I/O number of QJ61CL12 in "I/O Address" and then click on "Start Monitoring".



(b) Monitoring Items

1) Host Station

Displays that the master station is monitored.

2) Data Link Status

Displays data link status of the host station.
Start Data linking: Data link is active.
Stop Data linking: Data link is stopped.
Initial comm. incomplete: Initial communication incomplete status

3) Action Status

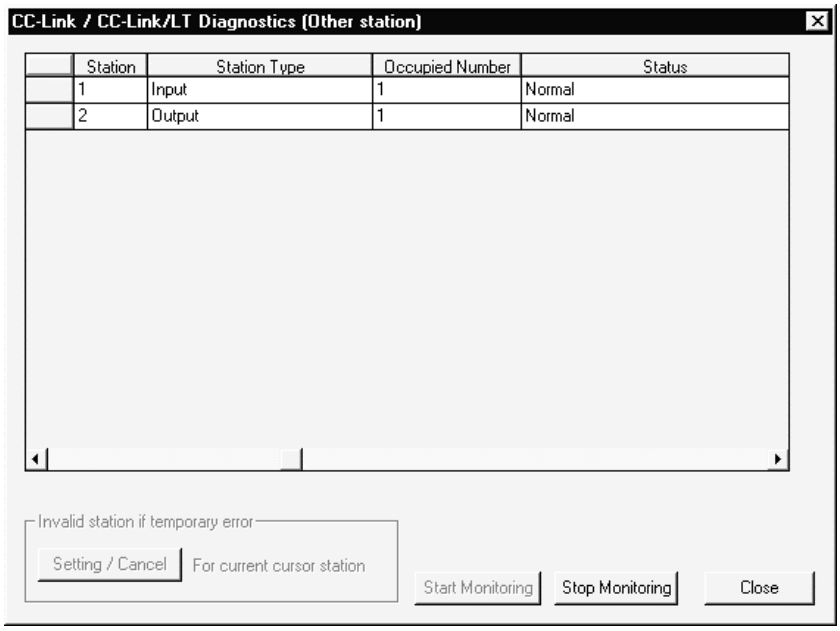
Displays the operating state of the host station.
Normal :All stations normally execute data link.
Data linking error :Faulty data link station(s) identified.

(2) Monitoring other station

The data link statuses of other stations (The stations other than the ones connected to peripheral devices) are monitored.

(a) Operating steps

From “Diagnostics”, activate “CC-Link / CC-Link/LT diagnostics” and click on “Monitoring other station”.



(b) Monitoring items

1) Station

Displays the first station number allocated for each station.

2) Station Type

Displays station types.

“Input” : Remote I/O station input type
“Output” : Remote I/O station output type
“Input/Output” : Remote I/O station Input/output type
“Device” : Remote device station

3) Occupied Number

Displays the number of occupied stations.

4) Status

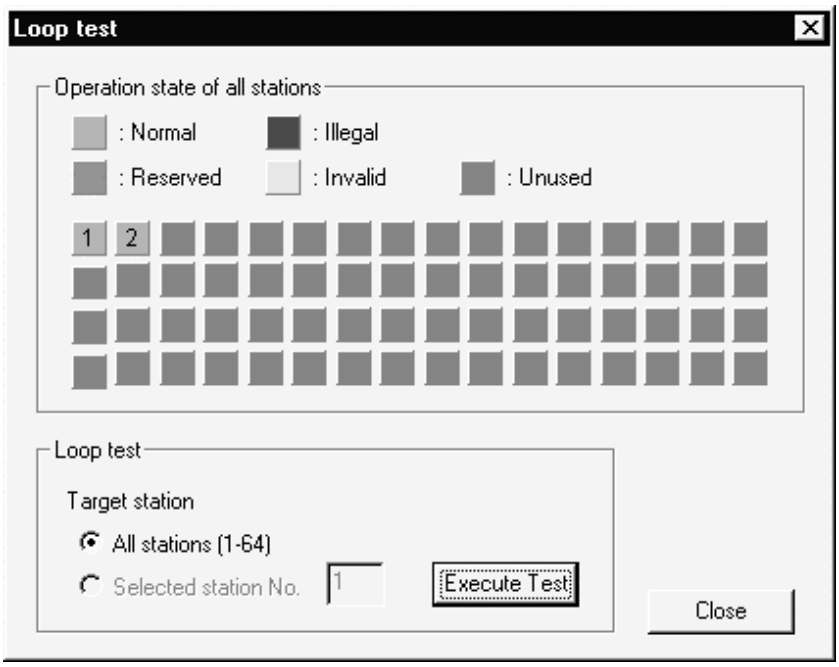
Displays the link status of the module.

(3) Loop test

The operating states of connected remote stations are checked on the screen. Normally operating stations and abnormal stations are shown in "blue" and "red" respectively

(a) Operating steps

From "Diagnostics", activate "CC-Link. / CC-Link/LT Diagnostics" and click on "Loop test".



Click on "Execute Test" to make test on all of the connected stations.

POINT

(1) In the CC-Link/LT, "Reserved", "Invalid" and "Unused" stations are not displayed.

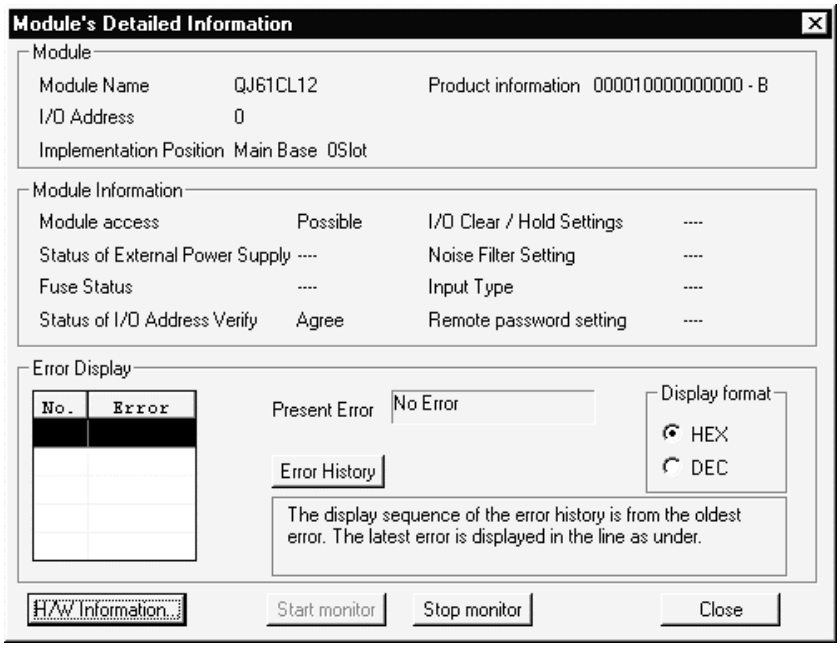
(2) If the station number is duplicated, the operating status may be displayed in "white".
Check the station number and the number of occupied stations for the remote station displayed in "white", and make the correct setting to eliminate the duplication.

(4) H/W Information

The operating state and setting state of the QJ61CL12 are displayed on the screen.

(a) Setting

After entering from “Diagnostics”, select a module in “System monitor” and proceed to “Module’s Detailed Information” – “H/W Information”.



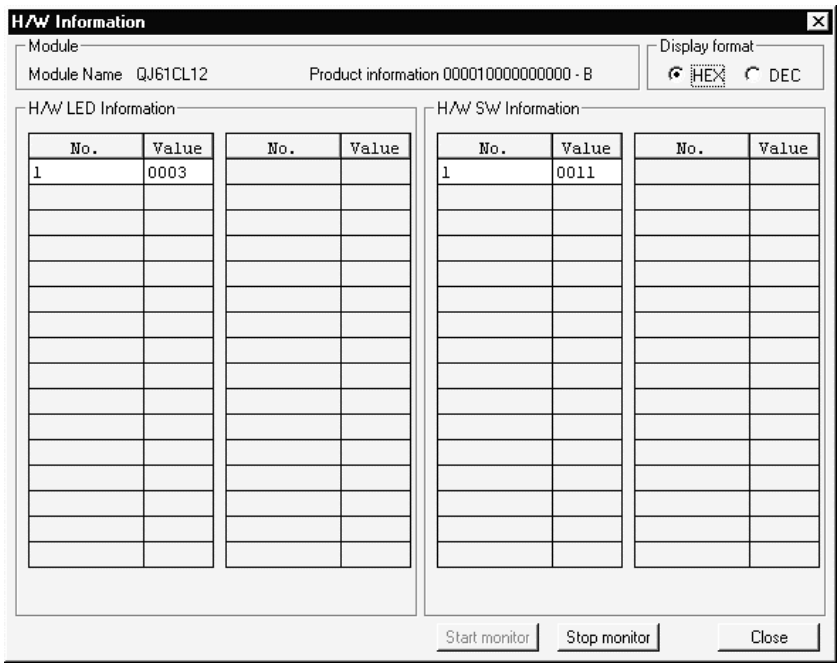
(b) Product information

The function version of the module is shown as follows:

000010000000000-B

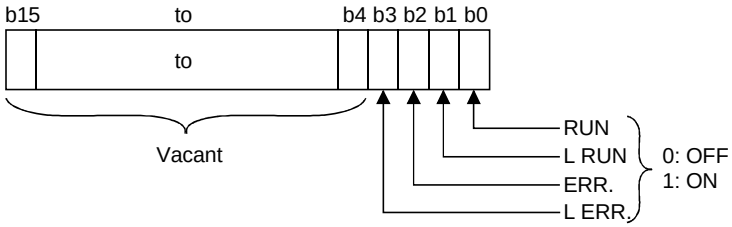
Function version B

POINT
The display of Error History is not available for the CC-Link/LT.



(c) H/W LED Information

The LED statuses are displayed on the screen.

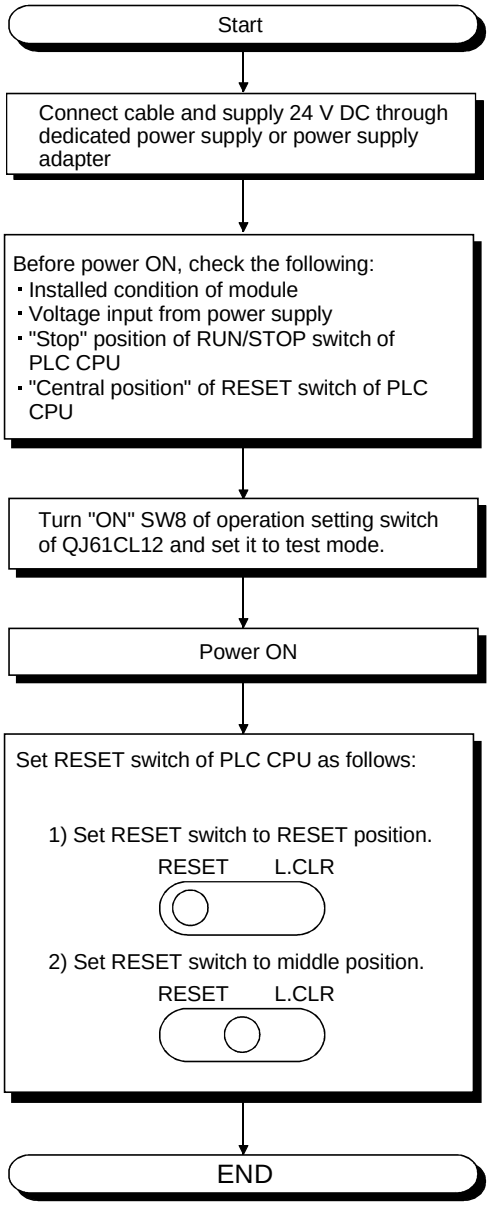


(d) H/W SW Information

External switch information (Buffer memory address 17: Un\G17) is displayed on the screen. (See Section 3.3.2 (5).)

6.7 Check of Module Condition (Self-loopback Test)

This test allows you to check if the module itself operates normally or not.
Follow the steps shown below.


Start
Connect cable and supply 24 V DC through dedicated power supply or power supply adapter
Before power ON, check the following:
・Installed condition of module
・Voltage input from power supply
・"Stop" position of RUN/STOP switch of PLC CPU
・"Central position" of RESET switch of PLC CPU
Turn "ON" SW8 of operation setting switch of QJ61CL12 and set it to test mode.
Power ON
Set RESET switch of PLC CPU as follows:
1) Set RESET switch to RESET position.
RESET L.CLR
2) Set RESET switch to middle position.
RESET L.CLR
END

[Test Results]

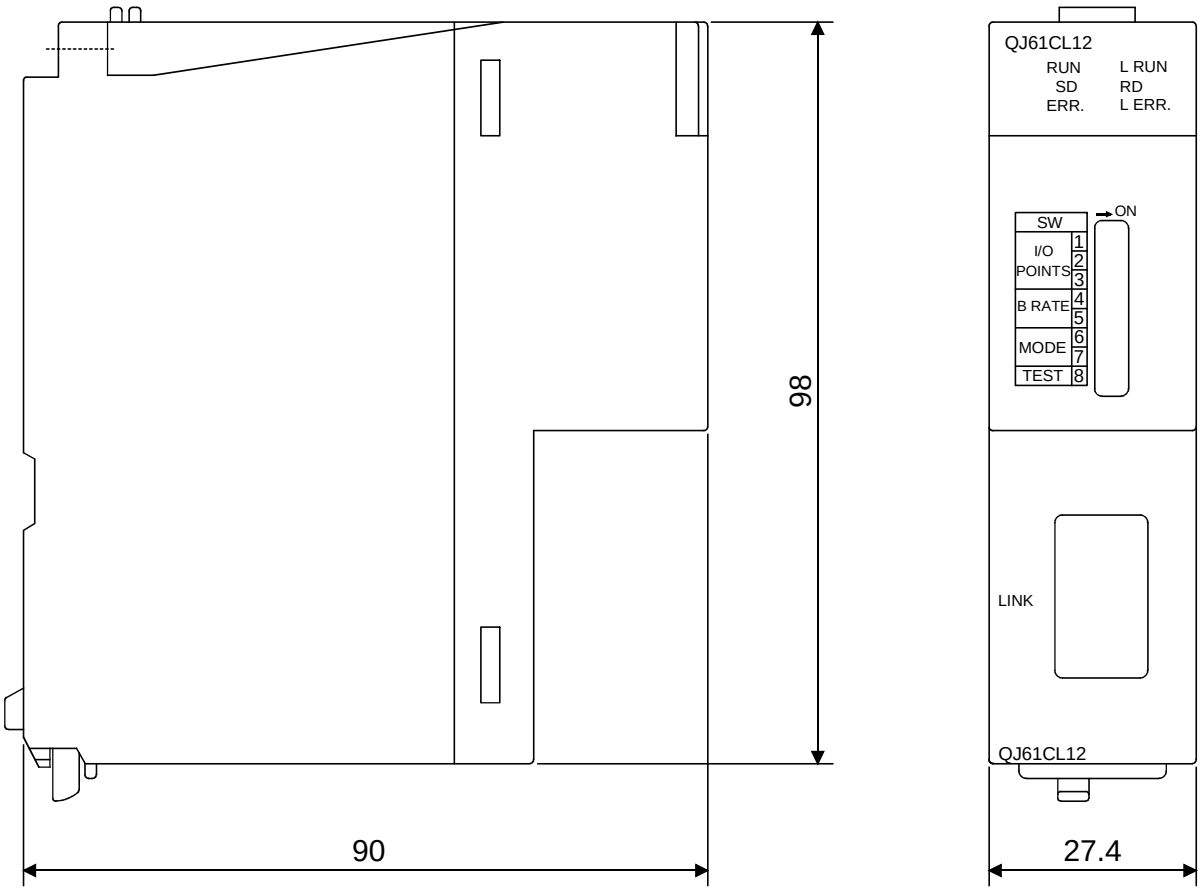
	LED Indication						Corrective Action
	RUN	ERR.	SD	RD	L RUN	L ERR.	
When normal	ON	OFF	*1	*1	ON	OFF	—
When faulty	ON	OFF	OFF	OFF	OFF	ON	Replace module because of faulty hardware
	OFF	OFF	OFF	OFF	OFF	OFF	
	ON	ON	OFF	OFF	OFF	OFF	Set operation setting switch again.

*1: Dimly lit or blinks.

APPENDIX

Appx 1 Drawing Showing Outer Dimensions

Outer dimensions of QJ61CL12 are as follows:



Unit: mm

APP

App - 1

Appx 2 I/O Assignment Sheet

The following is the I/O Assignment Sheet for the case that the start I/O number of the QJ61CL12 is X/Y00.
Make photocopies and use them as necessary.

Appx 2.1 I/O Assignment Sheet for 4-Point Mode Setting

I/O Assignment Sheet for 4-Point Mode Setting

Station No.	Model Name	Input	Output	Station No.	Model Name	Input	Output
		X 0	Y 0			X 0	Y 0
		1	1			1	1
		2	2			2	2
		3	3			3	3
		X 4	Y 4			X 4	Y 4
		5	5			5	5
		6	6			6	6
		7	7			7	7
		X 8	Y 8			X 8	Y 8
		9	9			9	9
		A	A			A	A
		B	B			B	B
		X C	Y C			X C	Y C
		D	D			D	D
		E	E			E	E
		F	F			F	F
		X 0	Y 0			X 0	Y 0
		1	1			1	1
		2	2			2	2
		3	3			3	3
		X 4	Y 4			X 4	Y 4
		5	5			5	5
		6	6			6	6
		7	7			7	7
		X 8	Y 8			X 8	Y 8
		9	9			9	9
		A	A			A	A
		B	B			B	B
		X C	Y C			X C	Y C
		D	D			D	D
		E	E			E	E
		F	F			F	F

APP

App - 2

Appx 2.2 I/O Assignment Sheet for 8-Point Mode Setting

I/O Assignment Sheet for 8-Point Mode Setting

Station No.	Model Name	Input	Output	Station No.	Model Name	Input	Output
		X 0	Y 0			X 0	Y 0
		1	1			1	1
		2	2			2	2
		3	3			3	3
		4	4			4	4
		5	5			5	5
		6	6			6	6
		7	7			7	7
		X 8	Y 8			X 8	Y 8
		9	9			9	9
		A	A			A	A
		B	B			B	B
		C	C			C	C
		D	D			D	D
		E	E			E	E
		F	F			F	F
		X 0	Y 0			X 0	Y 0
		1	1			1	1
		2	2			2	2
		3	3			3	3
		4	4			4	4
		5	5			5	5
		6	6			6	6
		7	7			7	7
		X 8	Y 8			X 8	Y 8
		9	9			9	9
		A	A			A	A
		B	B			B	B
		C	C			C	C
		D	D			D	D
		E	E			E	E
		F	F			F	F

App - 3

Appx 2.3 I/O Assignment Sheet for 16-Point Mode Setting

I/O Assignment Sheet for 16-Point Mode Setting

Station No.	Model Name	Input	Output	Station No.	Model Name	Input	Output
		X 0	Y 0			X 0	Y 0
		1	1			1	1
		2	2			2	2
		3	3			3	3
		4	4			4	4
		5	5			5	5
		6	6			6	6
		7	7			7	7
		8	8			8	8
		9	9			9	9
		A	A			A	A
		B	B			B	B
		C	C			C	C
		D	D			D	D
		E	E			E	E
		F	F			F	F
		X 0	Y 0			X 0	Y 0
		1	1			1	1
		2	2			2	2
		3	3			3	3
		4	4			4	4
		5	5			5	5
		6	6			6	6
		7	7			7	7
		8	8			8	8
		9	9			9	9
		A	A			A	A
		B	B			B	B
		C	C			C	C
		D	D			D	D
		E	E			E	E
		F	F			F	F

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WARRANTY

Please confirm the following product warranty details before using this product.

1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company.
However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion. Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.

[Gratis Warranty Term]

The gratis warranty term of the product shall be for one year after the date of purchase or delivery to a designated place.
Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be eighteen (18) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

[Gratis Warranty Range]

(1) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.
(2) Even within the gratis warranty term, repairs shall be charged for in the following cases.
1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
2. Failure caused by unapproved modifications, etc., to the product by the user.
3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
4. Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.
5. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
6. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
7. Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

2. Onerous repair term after discontinuation of production

(1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued. Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.
(2) Product supply (including repair parts) is not available after production is discontinued.

3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

4. Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation of damages caused by any cause found not to be the responsibility of Mitsubishi, loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products, special damages and secondary damages whether foreseeable or not , compensation for accidents, and compensation for damages to products other than Mitsubishi products, replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

5. Changes in product specifications

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice.

6. Product application

(1) In using the Mitsubishi MELSEC programmable logic controller, the usage conditions shall be that the application will not lead to a major accident even if any problem or fault should occur in the programmable logic controller device, and that backup and fail-safe functions are systematically provided outside of the device for any problem or fault.
(2) The Mitsubishi programmable logic controller has been designed and manufactured for applications in general industries, etc. Thus, applications in which the public could be affected such as in nuclear power plants and other power plants operated by respective power companies, and applications in which a special quality assurance system is required, such as for Railway companies or Public service purposes shall be excluded from the programmable logic controller applications.
In addition, applications in which human life or property that could be greatly affected, such as in aircraft, medical applications, incineration and fuel devices, manned transportation, equipment for recreation and amusement, and safety devices, shall also be excluded from the programmable logic controller range of applications.
However, in certain cases, some applications may be possible, providing the user consults their local Mitsubishi representative outlining the special requirements of the project, and providing that all parties concerned agree to the special circumstances, solely at the users discretion.

CC-Link/LT Master Module

User's Manual

MODEL	QJ61CL12-U-SY-E
MODEL CODE	13JR62
SH(NA)-080351E-D(0501)MEE	

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE : 1-8-12, OFFICE TOWER Z 14F HARUMI CHUO-KU 104-6212,JAPAN
NAGOYA WORKS : 1-14 , YADA-MINAMI 5-CHOME , HIGASHI-KU, NAGOYA , JAPAN

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Specifications subject to change without notice.